FROST & SULLIVAN

DATAMARK – MICHAEL BAKER INTERNATIONAL

2022
PRODUCT LEADER

UNITED STATES NG911 GIS PRODUCT LEADERSHIP AWARD INDUSTRY

FROST & SULLIVAN

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. DATAMARK – Michael Baker International excels in many of the criteria in the NG911 GIS space.

AWARD CRITERIA

Product Portfolio Attributes	Business Impact
Match to Needs	Financial Performance
Reliability and Quality	Customer Acquisition
Product/Service Value	Operational Efficiency
Positioning	Growth Potential
Design	Human Capital

Match Solution to Customer Needs

NG911 represents an industry transformation that proactively enhances public safety by acknowledging and catering to the rapidly evolving demands, products, lifestyles, and technologies of citizens. COVID-19, natural calamities, and social unrest have elevated pressure on states and counties that have not yet initiated NG911 deployments to accelerate rollouts. Frost & Sullivan estimates NG911 market penetration, based on the percentage of the United States (US) population covered by closed NG911 contracts, to grow from approximately 70.5% at year-end (YE) 2021 to approximately 96.1% by 2026.

> *"As the public safety sector evolves to no longer rely on the master street address guide (MSAG) and automatic location information (ALI) databases, GIS plays an increasingly crucial role in NG911 emergency call routing and location validation. The integrity and accuracy of GIS data is critical for NG911 to succeed."*
>
> *- Brent Iadarola,*
> *Vice President Research, Frost & Sullivan*

Standards bodies such as National Emergency Number Association (NENA) and Association of Public Safety Communications Officials (APCO) have driven NG911 standards development, training, education, and advocacy. NENA introduced the i3 standard which details the infrastructure and interfaces designed to provide the foundation of the NG911 architecture. The NENA i3 standard defines both the transitional and core elements for NG911. Advancements in cloud-based platforms for next gen core services (NGCS), call handling equipment (CHE), geographical

information systems (GIS) and public safety answering point (PSAP) operational solutions have reduced costs and accelerated innovation in NG911 systems.

Exhibit 1: The Evolution of Traditional 911 to NG911

		Traditional 911	NG911
1	Network Technology	Traditional analog, circuit-switched technology designed to support landline 911	Managed emergency services IP networks (ESInets) support IP based communications exchanges
2	Call Routing	Legacy selective-router-based 9-1-1 networks; static emergency service numbers (ESNs)	Next gen core services (NGCS) intelligently obtain, manage, control, store, validate, and route IP-based data to the appropriate PSAP
3	Call Handling Equipment (CHE)	Legacy call handling equipment not capable of handling texts, photos, video, SIP, or i3-based calls	i3 compliant IP-based call handling user interfaces, connectivity to the ESInet, and enhanced functional elements for voice and data
4	Geographical Information Systems (GIS)	911 calls mapped based on static addresses, street name, and city information stored in the master street address guide (MSAG)	Location validation function (LVF) validates address locations; emergency call routing function (ECRF) leverages GIS data to dynamically route calls to the correct PSAP
5	PSAP Operational Solutions	Siloed solutions without robust analytics; limited incidence intelligence from supplemental connected data sources	Cloud-based, integrated operational solutions leveraging AI/ML for CAD, RMS, incident, and recording applications, integration of supplemental data sources
		Traditional 911	NG911

Source: Frost & Sullivan

As the public safety sector evolves to no longer rely on the master street address guide (MSAG) and automatic location information (ALI) databases, GIS plays an increasingly crucial role in NG911 emergency call routing and location validation. GIS plays a critical role by providing PSAPs with real-time location data that can be synchronized across local, state, and regional levels to optimize PSAP operations and enhance emergency response times. The integrity and accuracy of GIS data is critical for NG911 to succeed.

In this environment, Frost & Sullivan believes the DATAMARK – Michael Baker International VEP cloud-native GIS solution is uniquely designed to cater to the evolving technologies and requirements that have emerged in the next generation of public safety. DATAMARK – Michael Baker International VEP provides a reliable software as a service (SaaS) GIS solution with a customizable, user-friendly platform to validate/edit/provision (VEP) location data in alignment with NG911 data standards set by NENA. Importantly, DATAMARK – Michael Baker International VEP provides highly accurate and reliable GIS data for local and regional providers that can be leveraged and seamlessly shared across neighboring 911 jurisdictions.

Reliability and Quality

The integrity and accuracy of GIS data is critical for NG911. Competitive factors and key differentiators in the NG911 GIS market include the service model, data quality, accuracy, breadth of data layers, redundancy, scalability, security, standards compliance, data management tools, sustainable data maintenance/support, pricing, and analytics/reporting.

> *"New technologies have fundamentally changed the way we live, communicate, and interact, ushering in an array of new requirements and opportunities for public safety entities. In this environment, GIS DATAMARKS's cloud-native, 'as-a-service' approach to GIS provides a robust foundation to support next generation applications and use cases in public safety."*
>
> *- Brent Iadarola,*
> *Vice President Research, Frost & Sullivan*

DATAMARK – Michael Baker International's 'one-stop-shop' VEP platform enables end-to-end GIS data aggregation, validation, and maintenance, uniquely addressing public safety requirements as the sector migrates from legacy 911 to NG911. The solution is built on the Esri ArcGIS Enterprise platform and has an integrated data validation engine which enables quick and easy data manipulation. VEP validates data using over 35 unique validation categories (including address points, road centerlines, PSAP boundaries, provisioning boundaries and emergency service boundaries), and can collate relationships between data layers and MSAG/ALI databases. Importantly, the solution provides highly customizable capabilities for users, editors, and administrators. With DATAMARK – Michael Baker International's SaaS model there is no need to purchase additional GIS software licenses or maintain hardware.

911 administrators are generally not risk takers and are looking for GIS vendor stability, operational efficiency, compliance with industry standards, and sophisticated data management tools and support. NG911 administrators are increasingly asking for one-stop shop management GIS solutions. A clear theme over the course of Frost & Sullivan's research has been that many public safety entities do not have the resources, expertise, or patience to manage the complexities of maintaining and curating GIS data in-house. GIS vendors that offer trusted, managed solutions that are user friendly and reliable are best positioned to win GIS state and local contracts. Frost & Sullivan research indicates the VEP solution addresses these critical customer requirements. The VEP solution provides reliable access to the highest quality GIS data with robust data management tools, supporting an efficient transition to NG911 for administrators and public safety answering points (PSAPs).

Operational Efficiency

The vision of NG911 is to interconnect PSAPs and other agencies in a standards-based way, enabling shared resources, information, and costs. Importantly, DATAMARK – Michael Baker International VEP enables agencies to conduct GIS data aggregation and reconciliation for their own GIS datasets as well as neighboring jurisdictions, thus ensuring seamless jurisdictional boundaries. Moreover, VEP allows for the reconciliation of NG911 GIS data with legacy 911 databases and related GIS datasets.

COVID-19 exposed the need for cloud platforms that enable universal access to mission critical public safety solutions. The VEP cloud architectures enhances the flexibility of infrastructure and enables fallback

options for unanticipated events or circumstances. The cloud-native framework ensures GIS solutions can be securely and accessed from any location with a browser connection with no additional hardware requirements.

Growth Potential

Generally, counties or states that control PSAPs are the purchasers of NG911 GIS systems. Many states centrally organize their PSAPs to conduct statewide NG911-ready GIS upgrades, while others purchase upgrades on a PSAP-by-PSAP basis or through regional coalitions. While statewide GIS upgrades have emerged as the preferred (and often most efficient) approach to NG911, some states continue to implement NG911 incrementally, based on their ability to fund regional deployments.

To address the broad and evolving range of requirements for local, regional, and state GIS stakeholders, DATAMARK – Michael Baker International VEP is available in three subscription-based models: Validator, Editor, and Aggregator. Each of these offerings can be securely accessed from anywhere via the cloud-based architecture. DATAMARK – Michael Baker International's VEP comes with dedicated on-going support, complies with national i3 standards, and is highly configurable (recognizing one size does not fit all). Finally, DATAMARK – Michael Baker International's team of data scientists pro-actively support, train, and educate customers throughout their full NG911 journey.

DATAMARK – Michael Baker International's service model, cloud architecture, user-friendly data management tools, and dedicated customer support align with evolving customer requirements and, consequently, Frost & Sullivan believes VEP has significant growth potential as the public safety market transitions from legacy 911 to NG911.

Conclusion

New technologies have fundamentally changed the way we live, communicate, and interact, ushering in an array of new requirements and opportunities for public safety entities. In this environment, DATAMARK – Michael Baker International has developed a visionary NG911 GIS platform designed for the next generation of public safety. Frost & Sullivan believes DATAMARK – Michael Baker International's innovative approach to NG911 GIS provides a robust foundation to support advanced applications and compelling use cases in the public safety sector.

Frost & Sullivan acknowledges DATAMARK – Michael Baker International's strong overall commitment to innovation and creativity in GIS and recognizes the DATAMARK – Michael Baker International VEP solution with Frost & Sullivan's 2022 Product Leadership Award in the NG911 GIS market.

What You Need to Know about the Product Leadership Recognition

Frost & Sullivan's Product Leadership Award recognizes the company that offers a product or solution with attributes that deliver the best quality, reliability, and performance in the industry.

Best Practices Award Analysis

For the Product Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Product Portfolio Attributes

Match to Needs: Customer needs directly influence and inspire the product portfolio's design and positioning

Reliability and Quality: Products consistently meet or exceed customer expectations for performance and length of service

Product/Service Value: Products or services offer the best value for the price compared to similar market offerings

Positioning: Products serve a unique, unmet need that competitors cannot easily replicate

Design: Products feature innovative designs, enhancing both visual appeal and ease of use

Business Impact

Financial Performance: Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at http://www.frost.com.

The Growth Pipeline Engine™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- Mega Trend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)