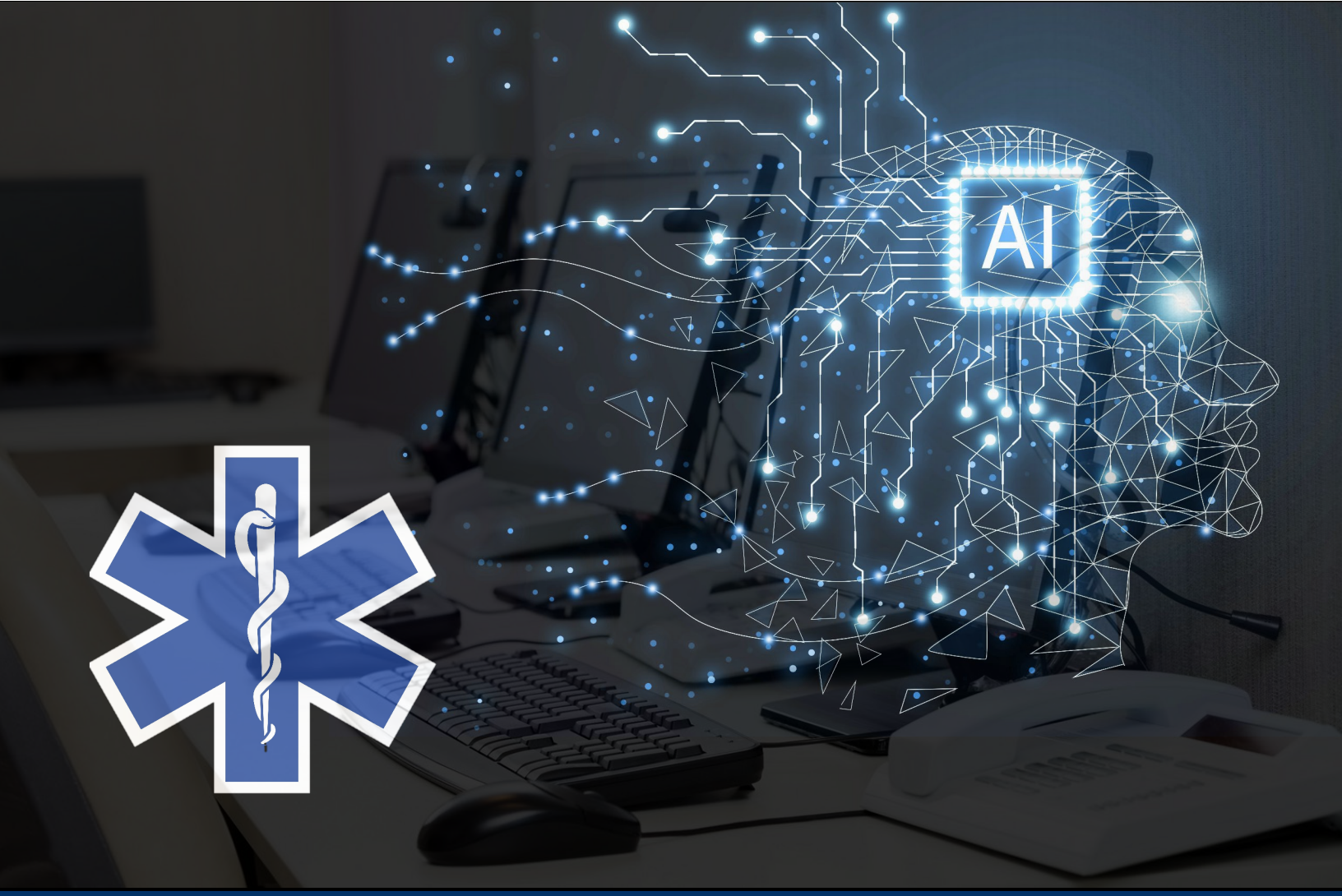

Artificial Intelligence-Facilitated Emergency Medical Services Call Center Software

Market Survey Report

December 2023

Science and Technology

NUSTL®
NATIONAL URBAN SECURITY TECHNOLOGY LABORATORY

Approved for Public Release

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FOREWORD

The National Urban Security Technology Laboratory (NUSTL) is a federal laboratory within the U.S. Department of Homeland Security (DHS) Science and Technology Directorate (S&T). Located in New York City, NUSTL is the only national laboratory focused exclusively on supporting the capabilities of federal, state, local, tribal, and territorial responders to address the homeland security mission. The laboratory assists responders with the use of technology to prevent, protect against, mitigate, respond to, and recover from homeland security threats and incidents. NUSTL provides expertise on a wide range of subject areas, including chemical, biological, radiological, nuclear, and explosive detection, personal protective equipment, and tools for emergency response and recovery.

NUSTL manages the System Assessment and Validation for Emergency Responders (SAVER) program, which provides information on commercially available equipment to assist response organizations in equipment selection and procurement. SAVER knowledge products provide information on equipment that falls under the categories listed in the DHS Authorized Equipment List (AEL), focusing primarily on two main questions for the responder community: "What equipment is available?" and "How does it perform?" The SAVER program works with responders to conduct objective, practitioner-relevant, operationally-oriented assessments and validations of commercially available emergency response equipment. Having the right tools provides a safer work environment for responders and a safer community for those they serve.

NUSTL is responsible for all SAVER activities, including selecting and prioritizing program topics, developing SAVER knowledge products, and coordinating with other organizations to leverage appropriate subject matter expertise. In conjunction with the DHS S&T Operational Experimentation (or OpEx") Program, NUSTL conducted a market survey of commercially available Artificial Intelligence -facilitated Emergency Medical Services call center software. This equipment falls under the AEL reference number 04AP-010-CADS titled System, Dispatch, Computer Aided.

SAVER reports are available at www.dhs.gov/science-and-technology/saver-documents-library.

Visit the NUSTL website at www.dhs.gov/science-and-technology/national-urban-security-technology-laboratory or contact the lab at NUSTL@hq.dhs.gov.

U.S. Department of Homeland Security

SAVER

System Assessment and Validation for Emergency Responders

POINT OF CONTACT

National Urban Security Technology Laboratory (NUSTL)
U.S. Department of Homeland Security
Science and Technology Directorate
201 Varick Street, Suite 900
New York, NY 10014
Email: NUSTL@hq.dhs.gov
Website: www.dhs.gov/science-and-technology/SAVER

TECHNICAL SUPPORT

Operational Experimentation Program (OpEx)
Technology Scouting and Transition
U.S. Department of Homeland Security
Science and Technology Directorate
Email: SandT_TechOpEx@hq.dhs.gov
Website: www.dhs.gov/science-and-technology

Authors:

Matthew Monetti, Project Lead, DHS S&T NUSTL
Leah Capek, OpEx Support Team
Jordan Friedman, OpEx Support Team
Kyle King, OpEx Support Team
Christopher Polacco, DHS S&T OpEx Program Coordinator
Heston Posner, Senior Analyst, DHS S&T NUSTL
John Quinn, OpEx Support Team
Alex Stewart, OpEx Support Team

EXECUTIVE SUMMARY

Artificial intelligence (AI)-facilitated emergency medical services (EMS) call center software is a data integration tool that uses advancements in computing to guide Public Safety Telecommunicators and call center personnel in determining a patient's status and condition, and in making real-time recommendations for patient care and disposition in the field. Emergency responder agencies can use AI-facilitated EMS call center software to help staff identify the nature of the medical emergency, the type of assistance needed, and how to best streamline the emergency response process. This software is not intended to replace call center staff, but rather to quickly and efficiently provide data that will enhance staff effectiveness.

Between June 2022 and August 2023, the Systems Assessment and Validation for Emergency Responders (SAVER) program conducted a market survey of commercially available AI-facilitated EMS call center software. The market survey identified five AI-facilitated EMS call center software that can assist call center staff in determining the appropriate response during a medical emergency. This report is based on information gathered from manufacturer and vendor materials, open-source research, industry publications and a government-issued request for information (RFI) that was posted on FirstSource and the System of Award Management (SAM.gov) website. Three vendors responded to the RFI, so information included for two products is limited to what is publicly available.

Of the five products in this report:

- All five products use AI to make assessments of the patient as well as suggest relevant questions and actions to Public Safety Telecommunicators and call center personnel
- Four products can integrate with call center software; the remaining product requires vendor outreach to determine its integration capability with a given system
- Three products have the capacity to learn, be trained, and improve based on past calls and how each call center operates
- One product can use photos or videos to detect the caller's environment and identify the caller's physical condition

Prices for the products are dependent on several factors, including number of calls per year, minutes of calls, number of active users, or the configuration of the software. Manufacturers provided the SAVER team with prices for two of the five products included in this report; interested readers would need to reach out directly in order to obtain pricing information for the other products.

The purpose of this market survey report is to provide emergency responders with information that will guide emergency response agencies in making operational and procurement decisions. Emergency responder agencies should consider overall capabilities, technical specifications, and limitations of AI-facilitated EMS call center software in relation to their agency's operational needs when making equipment selections. Agencies should also consider impacts associated with integrating equipment into their power and information technology infrastructure, data management, concept of operations, and required maintenance.

Performance of these products and information included in this report has not been independently verified by the SAVER program.

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1.0 INTRODUCTION

Artificial intelligence- (AI-) facilitated emergency medical services (EMS) call center software is a software as a service (SaaS) tool that uses advanced algorithms to guide Public Safety Telecommunicators and call center personnel to help determine the patient's status and condition and make real-time recommendations for patient care and disposition in the field. The technology listens to and analyzes conversations and background noise, comparing each call to thousands of past ones. Using these data points, the service suggests the most relevant actions for the operator to consider, resulting in more efficient recommendations for patient management.

Public Safety Telecommunicators and call center personnel are the target end-users for AI-facilitated EMS call center software. AI-facilitated EMS call center software can support staff in identifying the nature of the medical emergency, the type of assistance needed, and how to best streamline the emergency response process.

Between June 2022 and August 2023, the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) Systems Assessment and Validation for Emergency Responders (SAVER) program conducted a market survey of commercially available AI-facilitated EMS call center software. This market survey report is based on information gathered from manufacturer and vendor materials, open-source research, industry publications and a government-issued request for information (RFI) that was posted on the System of Award Management website, SAM.gov. DHS S&T's Technology Scouting Group also contributed to the market research used in the development of this report. The SAVER program performed due diligence to develop a report that is representative of products in the marketplace.

For inclusion in this report, the AI-enabled software had to meet the following criteria:

- Complies with Health Insurance Portability and Accountability Act (HIPAA) regulations
- Uses encryption, while at rest and in transit
- Can be updated with applicable security patches via protected channels
- Can access databases typically available to EMS call centers, such as historical records, the status of resources, road conditions and traffic, and real-time audio
- Does not require call center personnel beyond typical staffing levels
- Does not require access to real-time video to provide support but may include using video, when available, as part of its functionality
- Processes and synthesizes information in real-time
- Does not require callers to have a specific app installed
- Furnishes information to the center operator that includes, but is not limited to, the nature of a medical emergency, the most appropriate response given available resources, and/or what protocols to consider

2.0 AI-FACILITATED EMS CALL CENTER SOFTWARE OVERVIEW

AI-facilitated EMS call center software functions by listening to and analyzing conversations and background noise – assessing words, tone, pitch, and quality – recording the call location and type, then determining possible response actions. After comparing each call to past data points, the software determines the most relevant actions and suggests them to the operator, resulting in a more efficient recommendation for patient management. The technology can use machine learning (ML) models to assess patients' medical conditions, allocate resources, and circulate important information.

2.1 Current Technologies

AI-facilitated EMS call center software is designed to provide standardized emergency medical protocols as well as recognize and diagnose emergency situations. In partnership with EMS departments, the software's algorithms can streamline call center tasks during critical medical emergencies and provide information to expedite treatment.

In addition to gathering medical information and making recommendations in real-time, AI-facilitated EMS call center software can often also log the information into the patient's medical records and collect feedback for future reference. When such a capability exists, sharing information outside of the call center requires the patient to grant permission. Ideally, this information sharing would be more complete, accurate, and quicker in providing the care facility with advanced notice of individual patient needs, condition(s), and circumstances. This would allow healthcare facilities to have more time to prepare incoming patients, to assume patient care more easily from EMS providers, and to provide medical care more expediently.

2.2 Key Components

AI-facilitated EMS call center software is a customizable data integration tool that can determine status, condition, and real-time recommendations for patient care and disposition in the field. [1] The software serves in an advisory capacity to the call-taker, suggesting relevant questions for the dispatcher to ask to find an efficient recommendation.

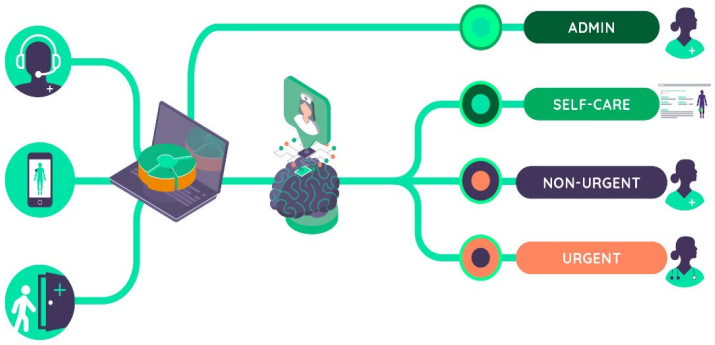

Figure 2-1 AI Patient Triage Schematic

Image Credit: Klinik Healthcare Solutions

When a call is received at the EMS call center, the AI-facilitated EMS call center software supports the call-taker by gathering information, or data inputs. The software then uses algorithms, often proprietary, to suggest relevant questions and eventually to determine patient status and recommendations, including self-care, non-urgent, and urgent care (Figure 2-1).

AI-facilitated EMS call center software uses algorithms to help detect critical medical emergencies and can often integrate with current EMS call center technology. Current AI-facilitated options comprise multiple capabilities including workflow integration, customizable content and user protocols, automatic keyword and critical symptom detection, dynamic question suggestion, and direct post-call feedback.

2.3 Applications

Integrating AI into EMS call centers can assist Public Safety Telecommunicators and call center personnel and first responders in making informed decisions during a medical emergency, enabling ML models to suggest resource allocation and circulate important information.

AI-facilitated EMS call center technology leverages legacy technologies (e.g., existing call center technology systems) along with the addition of AI systems to support EMS responders in the events unfolding during a medical emergency. AI can be used to prevent unnecessary emergency room visits, rapidly detect life-threatening situations, strategically allocate resources, and provide detailed location information to responders.

2.4 Use of Grant Funds for Certain Telecommunications and Video Surveillance Equipment or Services

The John S. McCain National Defense Authorization Act for Fiscal Year 2019 (NDAA), Pub. L. 115-232, Section 889 (NDAA) prohibits the use of federal funds, including loan and grant[1] funds, to obtain or acquire certain telecommunications technologies manufactured by certain entities or to enter into contracts with entities that use those technologies. The Office of Management and Budget (OMB) published regulations at 2 C.F.R. § 200.216 to clarify the application of the NDAA to the use of federal grant funds to procure or obtain certain telecommunications equipment or services.

Effective August 13, 2020, federal grant recipients and subrecipients (i.e., **non-federal entities**) are prohibited from obligating or expending loan or grant funds to procure or obtain[2] the following "covered telecommunications equipment or services":

- Telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities)

For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by:

- Hytera Communications Corporation
- Hangzhou Hikvision Digital Technology Company
- Dahua Technology Company
- Or any subsidiary or affiliate of such entities
- Other entities identified by the Secretary of Defense

1 This also includes cooperative agreement funds.
2 Nor may they extend or renew a contract to procure or obtain, or enter into a contract to procure or obtain the covered equipment or services.

The restriction also applies to systems that use the covered equipment or services as a substantial or essential component, and to subsidiaries or affiliates of those listed above[3]. See www.federalregister.gov/d/2020-17468/p-877https://www.federalregister.gov/d/2020-17468/p-877.

Costs associated with covered equipment and services are "unallowable" for grant funding. Grant recipients are responsible for ensuring funds are used only for allowable costs, and would be obligated to refund the government for unallowable costs. The Federal Emergency Management Agency (FEMA) issued FEMA Policy #405-143-1, Prohibitions on Expending FEMA Award Funds for Covered Telecommunications Equipment or Services (Interim) for further guidance on the Section 889 prohibitions. Additionally, OMB issued frequently asked questions (FAQs) on the topic.

For **federal** entities, FEMA published interim rules amending the Federal Acquisition Regulation[4].

2.5 Cybersecurity Considerations

There are several cybersecurity considerations that may pose adverse consequences if exploited by nefarious actors, such as:

- An adversary gaining access and taking control of an AI system to change the outputs that the system generates, which could impact its ability to suggest medical guidance to the call taker
- An adversary manipulating an AI system's training database by using inaccurate or mislabeled data, which could lead to mistakes and inaccurate decision making

Users should be aware of relevant federal, state, and local laws and regulations surrounding data security and privacy. A comprehensive cybersecurity policy should be in place to help protect the integrity of the software, such as the Federal Bureau of Investigation's Criminal Justice Information Services Security Policy. [2] As AI becomes more widely used and develops new capabilities in the future, the possibility for additional cybersecurity risks should be considered. [3]

2.6 Emerging Technologies

AI-facilitated EMS call center software is a relatively new technology in health care and has limited operational use at the time of this report. Other AI-enabled medical software, which is not currently designed for use by EMS call centers, may benefit EMS call center software developments in the future. Any such existing products would need to be revised to meet the criteria mentioned in section 1.0. It is also likely that AI-facilitated EMS call center software will continue to refine and develop capabilities, bringing about changes in the marketplace that should be considered.

2.7 Standards/Certification Programs

The market research team conducted a thorough review of relevant standards and certifications that apply to AI-facilitated EMS call center software. This section provides an overview of applicable standards and certifications to AI-facilitated EMS call center software.

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3 As well as telecommunications or video surveillance services provided by entities or using equipment described above.
4 www.federalregister.gov/documents/2019/12/13/2019-26579/federal-acquisition-regulation-prohibition-on-contracting-for-certain-telecommunications-and-video and www.federalregister.gov/documents/2019/08/13/2019-17201/federal-acquisition-regulation-prohibition-on-contracting-for-certain-telecommunications-and-video.

2.7.1 Consumer Technology Association Standards

The Consumer Technology Association (CTA) is the trade association representing U.S. consumer technology industry. CTA standards are developed by experts from across the consumer technology industry, including manufacturers, service providers, regulators, and other industry leaders. CTA standards provide specifications that define how products work and the ways the consumers interact with them. [4] Applicable CTA standards to AI-facilitated EMS call center software include:

- ANSI/CTA-2089, "Definitions and Characteristics of Artificial Intelligence," provides basic definitions and expected characteristics of AI in general
- ANSI/CTA-2090, "The Use of Artificial Intelligence in Health Care: Trustworthiness," outlines the requirements for AI solutions in health care to be considered trustworthy as well as the potential opportunities and challenges for AI in health care. The standard considers three types of trust, each with different populations and approaches:
    1. Human trust: human interaction as it relates to the user experience and level of autonomy of the AI solution
    2. Technical trust: the technical aspects of the design and training of the AI solution, including data quality and integrity, data security, bias, access, and privacy
    3. Regulatory trust: clear regulations, standards, and laws regarding the use of AI in health care, which can come from regulatory agencies, federal and state laws, accreditation boards, and international standardization frameworks [5]

2.7.2 Health Insurance Portability and Accountability Act Regulations

The Health Insurance Portability and Accountability Act (HIPAA) is a federal privacy law that sets requirements for the protection of certain personal identifiable health information. Generally, patients have the choice whether their health information can be disclosed to others, even for treatment or payment. Additionally, healthcare providers often give patients the choice to opt in or opt out of electronically receiving their health information.

Giving patients this information prior to making a decision encourages trust and meaningful consent. While HIPAA overrides less protective privacy laws, it allows for more protective privacy laws, including federal and state laws. AI solutions in health care must be in compliance with HIPAA regulations. [6]

2.7.3 International Academies of Emergency Dispatch Standards

International Academies of Emergency Dispatch (IAED), a non-profit headed by Priority Dispatch, has developed and maintained protocols for emergency call-taking since 1988, providing training, education, and certification for emergency dispatchers. [7] AI-facilitated EMS call center software may follow the current protocols for emergency call-taking. While some vendors adhere to IAED standards, compliance is not necessary for AI-facilitated EMS call center software; vendors may follow related standards that are not affiliated with their competitors. Perhaps the most helpful resource from IAED is the Emergency Communication Nurse System (ECNS). The ECNS has over 200 protocols that equip dispatchers with the ability to effectively address non-life-threatening situations by providing a standardized clinical assessment. [8] For more information on these standards, please visit https://www.emergencydispatch.org/what-we-do/emergency-priority-dispatch-system/nurse-triage-protocol.

2.7.4 International Organization for Standardization

The International Organization for Standardization (ISO) is a standards development organization comprised of international representatives from the national standards organizations of its member countries. There are many ISO standards that cover AI applications, testing and performance assessment, functional safety, and quality evaluation guidelines. These standards support considerations for implementing AI-facilitated call center solutions, including but are not limited to:

- Regulation of the underlying AI algorithms and data quality for analytics and ML
- Social, economic, and historical factors impacting local planning and applications
- Ensuring inclusiveness and equity through system taxonomies, controllability, and bias considerations in AI decision-making
- Risk management and protecting patient autonomy

Several ISO standards are applicable for AI-facilitated EMS call center technologies, including ISO 5055 Information technology – Software measurement – Software quality measurement – Automated source code quality measures, ISO 9000 Quality Management Systems, ISO 9001 Quality Management Systems, ISO 14001 Environmental Management Systems, ISO 50001 Energy Management Systems, ISO 20000 Information Technology Service Management, ISO 22301 Security and Resilience - Business Continuity Management Systems, ISO 27001 Information Security Management Systems, ISO 27017 Information Technology – Security Techniques (information security controls applicable to cloud services), ISO 27018 Information Technology – Security Techniques, Code of practice for protection of personally identifiable information (PII), ISO 27701 Security Techniques (privacy information management), and ISO 31000 Risk Management. For the full list of standards, please visit https://www.iso.org/home.html. [9]

2.7.5 The National 911 Program: Next Generation 911

Next Generation 911 (NG911) is a digital, internet protocol-based system that allows voice, photos, videos, and text messages between the public and the 911 network. [10] The system can manage call overload, natural disasters, and transfer calls based on caller location data.

The U.S. Department of Transportation's National Highway Traffic Safety Administration and U.S. Department of Commerce's National Telecommunications and Information Administration manage the Joint 911 Implementation and Coordination Office (ICO). The ICO facilitates coordination and communications among public and private stakeholders at local, state, tribal, federal, and national levels, administers a grant program for 911 call centers across the country and provides reports to Congress.

There are multiple standards development organizations with standards that are relevant to NG911. One in particular, the National Emergency Number Association (NENA), has a key relationship to NG911. For the full list of standards, please visit https://www.911.gov/issues/ng911/standards-for-enhanced-and-next-generation-911/.

2.7.6 National Emergency Number Association: The 9-1-1 Association

NENA is a non-profit organization focused on improving 911 by developing standards for 911 technology and operations as well as providing training for 911 professionals. [11] NENA also participates in outreach and advocacy for 911 to policymakers and the public, providing a link to 911 first responders and the community.

There are over 150 NENA standards and documents related to 911 core services, accessibility, agency systems, communications, data management, data structures, public safety answering point (PSAP) operations, PSAP logistics, development group administrative, and system security and resiliency. For the full list of standards and documents, please visit https://www.nena.org/page/aboutfaq2017.

2.7.7 Government Accountability Office

The Government Accountability Office's report, "Artificial Intelligence in Health Care: Benefits and Challenges of Machine Learning Technologies for Medical Diagnostics," outlines the opportunities and challenges associated with the use of ML in health care, which may apply to the use of AI-facilitated EMS call center software. [12]

The report identified benefits of ML technologies in health care, such as in earlier detection of diseases, more consistent data analysis, and expanding access to health care. However, it also identified some challenges, including:

- Demonstrating real-world performance across diverse clinical settings
- Meeting clinical needs and
- Addressing regulatory gaps

Some policy options the report identified for addressing the challenges associated with ML technology include required evaluation of the technology across a wide range of conditions and demographics, the creation of standards for collecting and sharing data, and collaboration in the development of these technologies. Agencies may consider these challenges that may be associated with integrating these systems into their operating systems and infrastructure.

2.7.8 Emergency Medical Dispatch Protocol Reference System

An Emergency Medical Dispatch Protocol Reference System (EMDPRS) is an emergency medical dispatch system approved by each department's medical director or relevant authority. The system has protocols for an emergency medical dispatcher, including:

- Caller interrogation questions
- Dispatch life support instructions
- Coding protocols
- Quality improvement program
- Training curriculum. [13]

For more information, please visit https://www.astm.org/f1258-95r22.html.

3.0 PRODUCT INFORMATION

This section provides information on five software products. Table 3-1 lists products by manufacturer and summarizes their characteristics as defined below. Additional detail on each AI-facilitated EMS call center software product is provided in the subsections that follow. Product information presented in this report was obtained directly from manufacturers, vendors, and their websites from June 2022 to August 2023. Three of the companies (APCO International, Corti, and HighWind) responded to the RFI. This information has not been independently verified by the SAVER program.

Below are definitions of the product information in Table 3-1, listed in column order.

Manufacturer/Model indicates the maker and particular product's name.

Price indicates the specific price or price range provided by the manufacturer or distributor. Within a range, the software system's price may vary depending on customizable features as selected by the purchaser as well as number of calls per year, minutes of calls, and number of active users.

Operating System Type refers to the those that are supported by the software, including Windows, MacOS, Linux, iOS and Android.

Required Technology indicates what required technology is included with the product or available for purchase at additional cost as well as any required technology that is not available from the manufacturer/vendor.

Integration Capabilities indicates whether the product can integrate with other existing call center technologies and, if so, which ones.

Input Data refers to what information the software listens to, ingests, and analyzes for its functionality.

Output Data refers to the information received by the call center operator(s) from the software.

Table 3-1 Product Comparison Matrix

Manufacturer and Product	Price	Operating System Type	Required Technology	Integration Capabilities	Input Data	Output Data
APCO International: IntelliComm	$30,000 - $50,000	IBM Cloud (cloud-based)	Personal computer (PC), internet access, standard browser	Computer-aided dispatch (CAD) system interface, Call-recording vendors	In-bound emergency calls; Speech, Situational information	Call Transcript, Triage Information, Trend Analysis
Corti: Engage	Fixed price (determined by # of calls per year)	Windows 10, Windows 11, MacOS, Linux	PC, internet access, standard browser	Existing call recording systems that record live calls, Optional integration with CAD systems	Telephony network traffic (e.g., SIP) or another audio stream	Audio recordings (.WAV), Structured JSON data with all events from the call, including AI suggestions and user event data from the optional triaging platform
Hexagon: HxGN OnCall Dispatch	*	*	*	*	In-bound emergency calls; Speech and text	*
HighWind: 911 AI Enhanced Emergency Calls	$1 per inhabitant within area of operation	Windows 10, Windows 11, Windows Server (2012 and up), MacOS, Linux, iOS, Android, and Google Chrome	PC, internet access, standard browser, webcam	United States and European EMS call center infrastructure	In-bound emergency calls; Speech, Environmental noise	Geographic output maps, Phone number(s), Picture(s), Full diagnostic(s)
Priority Dispatch: ProQA Paramount	*	*	*	Functions across Windows	In-bound emergency calls, Speech	*
* Indicates vendor outreach required						

3.1 APCO International, IntelliComm

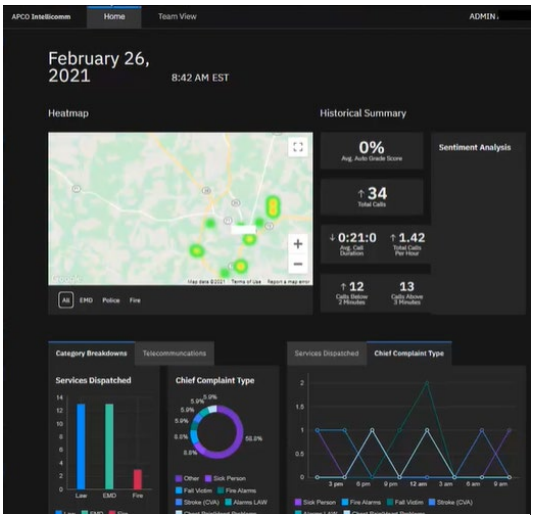

Figure 3-1 IntelliComm

Image Credit: APCO International

APCO International IntelliComm is a stand-alone dispatch guide card software that can contextualize emergency calls, aggregate collected situational information, and report to the agency and/or call center directors for analysis. The browser-based solution uses IBM Watson speech-to-text (STT) and ML capabilities to enhance the scripted criteria guidance used by professionals in emergency communications centers (ECCs) when interacting with 911 call data. IntelliComm's cognitive capabilities include predictive trend analysis, metadata processing, and the ability to learn based on how each agency operates. IntelliComm can be configured to meet agencies' standard operating procedures (SOPs) and to support any local or regional requirements. Agencies using the software connect to the IBM Cloud via a proxy server installed on site (if required) that uses a secure connection to communicate. As a browser-based solution, updates to the software will be made in the background without impacting equipment or service according to the manufacturer. APCO International claims that the augmented call taking will allow agency and call center directors to iteratively modify training materials to better meet callers' needs. APCO International also claims that Watson's ML capabilities can aid in a reduction of call times, provide accurate triage information, and expedite time sensitive emergency situations due to its ability to learn context over time and near real time interface that continuously updates the guidance about the incident.

IntelliComm is compliant with HIPAA, ANSI/CTA-2090, EMDPRS, and NG911 standards as well as information security and sections 889(a)(1)(A) and 889(a)(1)(B) of the National Defense Authorization Act. IntelliComm is also compliant with 10 ISO standards.

For an agency running an average of six workstations, APCO IntelliComm would cost in the $30,000–$50,000 range for the initial software configuration. Emergency medical dispatch certifications for agency personnel are priced separately. The APCO IntelliComm warranty requires agencies to pay an annual maintenance fee, which covers 99 percent minimum uptime, software updates, anomaly fixes, and 24/7 email and phone support.

3.2 Corti, Engage

Engage is an AI-facilitated system that integrates with existing systems, such as computer-aided dispatch (CAD) and electronic health records (EHR), to help Public Safety Telecommunicators and call center personnel respond effectively. The system's automatic summary generator collects all of the details as the call taker speaks with the patient.

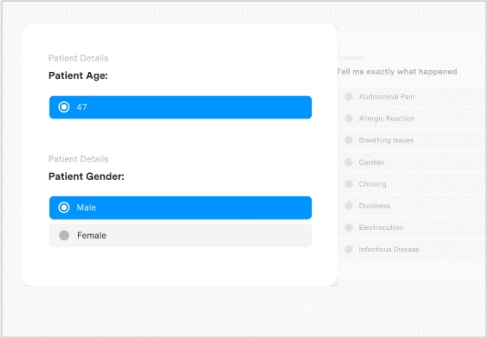

Figure 3-2 Engage

Image Credit: Corti

Engage offers continuous, data-driven improvement by learning from past calls to optimize protocols and question guidelines. Its maker Corti claims Engage will lower call handling time, increase triage accuracy, reduce downstream costs due to over-triaging, and make sure no patients are missed.

Engage is compliant with HIPAA, ANSI/CTA-2090, Standards 10 by IAED, sections 889(a)(1)(A) and 889(a)(1)(B) of the National Defense Authorization Act, and NG911 standards, including several industry-standard frameworks and guidelines. The price of the system is fixed, based on the number of calls received per year. The software does not have limitations on user licenses and usage time. The Service Level Agreement (SLA) signed upon purchasing a Corti product details the priority and timeframe in which product bugs and errors will be resolved.

3.3 Hexagon, HxGN OnCall Dispatch

The HxGN OnCall Dispatch suite features seven subsystems, each with varying incident management capabilities: (1) Advantage, (2) Call-Taker, (3) Essentials, (4) Viewer, (5) Dashboard, (6) Administrator, and (7) Smart Advisor. The Smart Advisor subsystem is an assistive AI solution that provides insights for Public Safety Telecommunicators and call center personnel during unfolding emergency events. The solution is intended to assist, rather than automate decision-making, equipping key personnel with relevant, real-time information during emergency calls.

Figure 3-3 HxGN OnCall Dispatch

Image Credit: Hexagon

The software features AI language capabilities that continuously monitor operational CAD data; look for similarities, trends, and anomalies in the calls received; and then notify the user of insights and event data in real-time. This enables the call taker to assess, share, and act on the alerts. The vendor claims the solution's ML capabilities can learn the call taker's preferences over time, delineating relevant information that supplements the call taker's knowledge of the emergency and providing actionable insights.

No information on prices or warranties was available at the time of publication of this report.

3.4 HighWind, 911 AI Enhanced Emergency Calls

HighWind offers an AI solution trained to assist 911 emergency dispatchers with diagnostics and triage of emergency situations. The solution complements existing call centers' systems. To support the decision-making process of the call taker, HighWind's Call Center AI solution uses a combination of neural networks to provide an assessment of the caller's shared visual information. [14] The system works by sharing a web link by text message to callers. HighWind also has an emergency call app that can be used in place of a call. This access permits the caller to send location, key information, and pictures that will be analyzed by AI. The pictures are analyzed by the product to recognize traumas (e.g., open wounds, lacerations, burns, hypothermia, bullet wounds, etc.), imagery for situational awareness (e.g., fire, road accident, flood, smoke, riot, body positions, respiratory distress, etc.) and emotions of the persons (e.g., fear, anxiety, pain, etc.). The AI determines the nature and severity of the emergency to assist triage and highlights the most critical emergencies to the dispatchers. The 911 call taker can visualize pictures, location and AI pre-diagnostics. The system also features automatic transcription to record the content of the conversation.

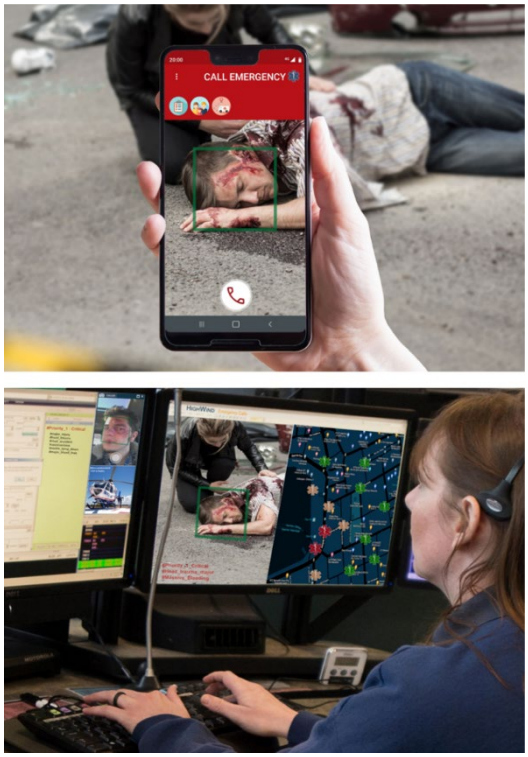

Figure 3-4 Tandem Smartphone App and 911 AI Enhanced Solution

Image Credit: HighWind

Callers with the downloaded free-of-charge app can also use it to create emergency calls, regardless of whether or not the closest EMS call center utilizes HighWind solutions. Figure 3-4 Tandem Smartphone App and 911 AI Enhanced Solution.

HighWind's 911 AI Enhanced Emergency Calls software is compliant with ANSI/CTA-2090, sections 889(a)(1)(A) and 889(a)(1)(B) of the National Defense Authorization Act, and select NG911 standards. Additionally, HighWind is working toward compliance with ISO 9000 and ISO 5055. Their software is also compliant with HIPAA regulations but will need formal confirmation from a U.S. lawyer. The software is sold as a yearly subscription fee ($1 USD per inhabitant) per call center based on the population in the area of operation. No information on warranties was available at the time of publication of this report.

3.5 Priority Dispatch, ProQA Paramount

ProQA Paramount is an AI-facilitated software that enables Public Safety Telecommunicators and call center personnel to quickly move through case entry and key questioning during emergency calls. ProQA Paramount can help dispatchers determine the appropriate determinant code for each call and can be programmed to display the response configuration specifically assigned to that code by local agency authorities and individual centers. The solution includes "Smart AI" that can provide relevant definitions and lists to the dispatcher during the key questioning phase of an emergency call. Additionally, the software can guide dispatchers through relevant post-dispatch instructions (PDIs) and pre-arrival instructions (PAIs), as well as case completion information.

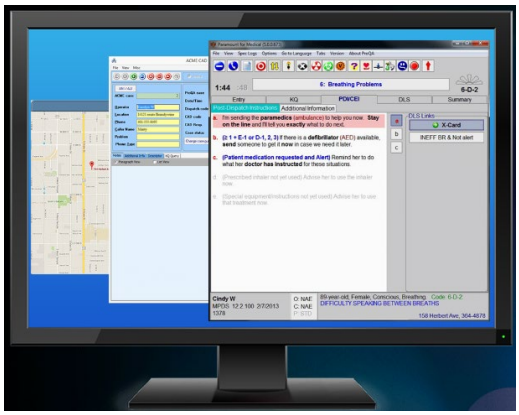

Figure 3-5 ProQA Paramount

Image Credit: Priority Dispatch

The software also integrates with Pulse Point's Automated External Defibrillator (AED) registry, a free app that allows emergency dispatchers to direct callers and/or emergency responders to the nearest AED location. [15] No information on prices or warranties was available at the time of publication of this report.

4.0 MANUFACTURER CONTACT INFORMATION

Additional information on the software products included in this report can be obtained from the manufacturers listed in Table 4-1.

Table 4-1 Manufacturer Contact Information

Manufacturer	Website	Address	Phone Number	Email Address
APCO International	https://apcointellicomm.org	351 N. Williamson Blvd. Daytona Beach, FL 32114-1112	(386) 322-2500	apcointellicomm@apcointl.org
Corti	www.corti.ai	Store Strandstraede 21, 4tv, 1255 Copenhagen Denmark	*	info@corti.ai
Hexagon	hexagon.com/products/hxgn-oncall-dispatch-smart-advisor	P.O. Box 3692, SE-103 59 Stockholm, Sweden	+46 8 601 26 20	*
HighWind	highwind-ems.com/ai/	France	+33 6 17 90 00 21	Adrien.ricci@highwind-ems.com
Priority Dispatch	priorityдispatch.net/proqa/	110 South Regent Street, Suite 500 Salt Lake City, Utah 84111 USA	800-363-9127	*
* Indicates “information not available”				

5.0 CONCLUSION

AI-facilitated EMS call center technology can leverage existing call center technology systems to support first responders in the events unfolding during a medical emergency. AI can be used to prevent unnecessary emergency room visits, rapidly detect life-threatening situations, strategically allocate resources, and provide detailed location information to responders. Integrating AI into EMS call centers can assist Public Safety Telecommunicators and call center personnel and first responders in making informed decisions during a medical emergency.

This market survey report provides information on five AI-facilitated EMS call center software products. Many of the systems can integrate with existing call center technology and listen to and understand patients on a call. While some of the systems provide suggestions to call-takers to determine the severity of the problem and medical response needed, other products use AI to have a conversation with patients, bypassing call-takers. These systems can also transfer calls to live call-center operators, if needed. Additionally, many of these systems analyze past call data to inform their handling of future calls as well as to learn insights on areas for improvement in quality and efficiency.

AI-facilitated EMS call center software is a relatively new technology in health care and is in limited use at the time of this report. It is likely that AI-facilitated EMS call center software will continue to be refined and additional capabilities for it will be developed in the future, and market changes should be expected. Furthermore, emergency responder agencies that consider purchasing AI-facilitated EMS call center software should carefully research each product's overall capabilities and limitations in relation to their agency's operational needs. Agencies should also consider impacts associated with integrating this type of software into their power and IT infrastructure, data management and privacy, concepts of operations and required maintenance.

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