

Creating the Digital 9-1-1 Centre

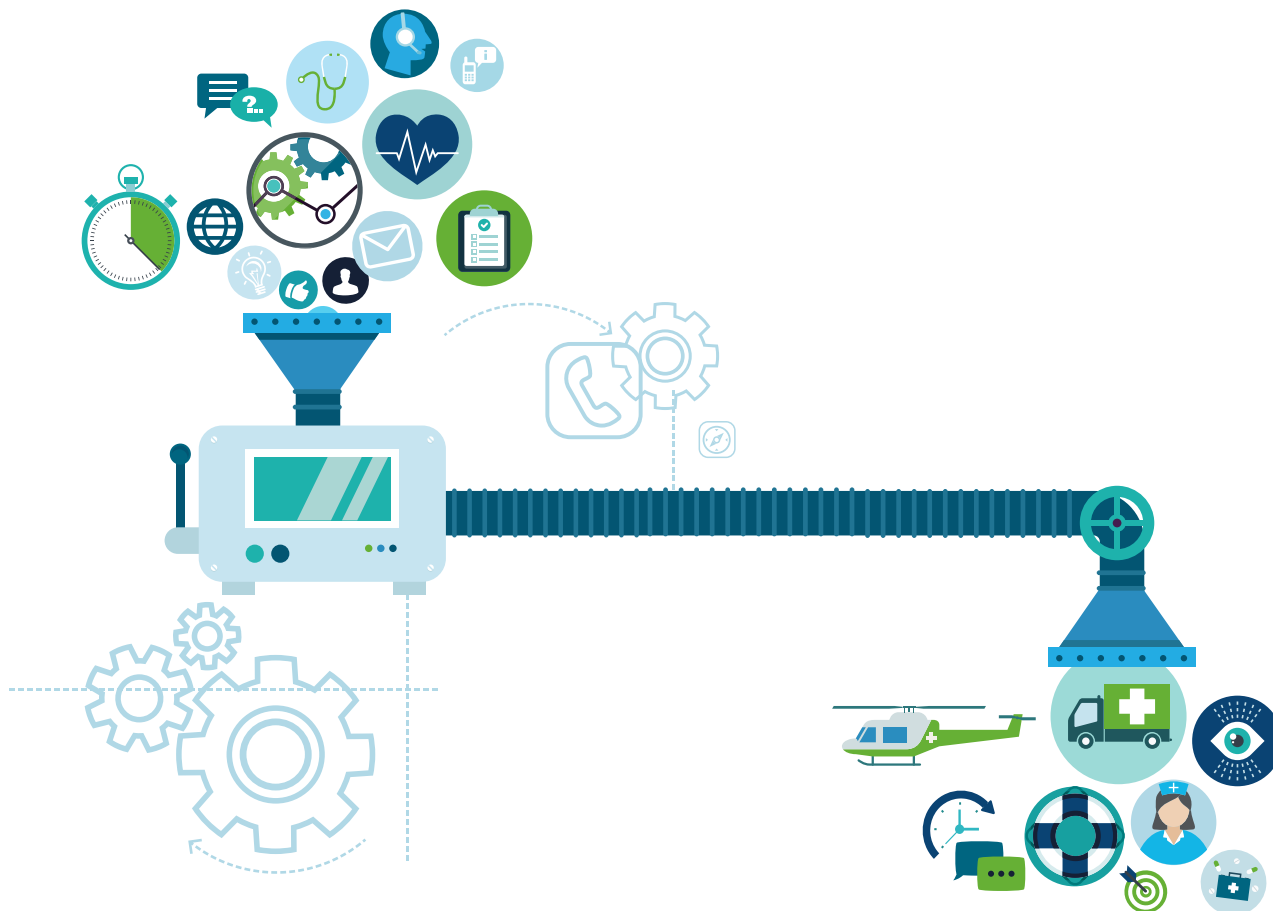
How PSAPs can meet NG9-1-1 goals with the digital technology and multi-channel methods already pioneered by commercial contact centers

As most States continue to implement Next Generation 9-1-1 (NG9-1-1) legislation, we look at what 9-1-1 centres can learn from the digital multi-channel transformation that many commercial contact centres have already undertaken.



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1. Introduction



Next Generation 9-1-1 (NG9-1-1) seeks to “enable the general public to make a 9-1-1 “call” (any real-time communication – voice, text, or video) from any wired, wireless, or IP-based device, and allow the emergency services community to take advantage of advanced call delivery and other functions through new internet working technologies based on open standards.

While North American PSAPs are focusing on putting in place the IP Multimedia Subsystems (IMS), High Availability IP infrastructure, and internal routing and recording systems needed to deliver these goals, there are other issues that need to be dealt with to ensure that the public receives the maximum benefit from the changes.

The impact of NG9-1-1 on call handlers (dispatchers) will be significant, with an already difficult job becoming more complicated, as they are expected to handle text, video, images, and chat sessions alongside voice calls.

In terms of processes, the increase in complexity is going to be felt all along the line – from case entry to key questioning to code determination to dispatch. Once 9-1-1 “calls” go digital, dispatchers can be presented with many more options and can capture more detail to transmit to responders, who, in turn, must be able to quickly access and understand that information in a fast-moving situation. Additional channels also mean the introduction of multiple systems, which dispatchers will have to be trained to use.

NG9-1-1 is therefore much more than a switch over to an IP-based infrastructure. It is an opportunity to revisit the 9-1-1 centre’s core processes and ensure they are hardened, streamlined, and optimised to provide the fastest, most effective response possible. This includes incorporating the many new agent assistance tools, communication technologies and digital channels which have become available in recent years. In short, it is digital transformation.

Many commercial contact centres have already been through the process of refocusing their efforts on delivering omnichannel digital customer experience technology over the last few years. As a supplier of agent desktop and workflow software for call handling to both 9-1-1 centres and commercial contact centres we have seen where each could help the other.

2. The digital 9-1-1 center



It's easy to forget that PSAPs are contact centres too - probably one of the most visible types of contact centers to the public in fact.

Of course, PSAPs operate to very different standards than traditional contact centres. Call waiting time, for example, must be almost zero and most other metrics are quite different. Average handling time, in situations where operators often have to stay online with callers until the ambulance arrives, is also less important.

In most contact centres, answering a call quickly and accurately is not a matter of life and death. While companies can and do go out of business because they provide lousy customer service, there isn't the same scale of risk that 9-1-1 centres face with every call.

Digital transformation has given commercial contact centres the tools to provide personalised service to consumers more quickly, efficiently, and cost-effectively than ever before. The same tools – modified for the environment – can ensure PSAPs access all the benefits of digital technologies and networks on behalf of their staff and users.

Digital channels

Most of us have long since gone digital and mobile, and we now expect to be able to contact any organisation or access any service via the device or channel of our choosing. When you hold in your palm an internet-enabled supercomputer and audio-visual communications device, these are the kinds of things you come to expect.

This need is one of the things that NG9-1-1 seeks to address.

While not all channels are created equal, and some are a lot more popular than others, it doesn't require much effort to integrate most of them and provide maximum convenience for users.

This white paper will not focus on the IP technology and infrastructure needed to allow the public to contact the PSAP by digital channels such as chat, email, and SMS.

There are many solutions from multiple vendors which enable an organisation to integrate them, as well as industry-standard digital initiatives such as FirstNet from the First Responder Network Authority.

What's more important, from a multi-channel (or omnichannel) point of view, is how those channels – and the systems which facilitate them – are accessed, used, and managed by call handlers.

In commercial contact centres we often talk about how an operation needs to have a 'single customer view' of its organisation and data, rather than having everything secreted into siloes that must be accessed using multiple systems. The reason being that this not only saves the call handler time in each call, it also allows them to give faster responses to users.

In PSAP terms, the analog would be ensuring call handlers have immediate access to all the processes and knowledge information they need regardless of the type of "call" they are handling. When responding to an email, SMS or message on social media; downloading an image or video from a caller's phone; or giving guidance over a two-way video link, call handlers should be able to access the same systems they do when handling a normal 9-1-1 phone call.

Ideally all types of interaction would be handled using a single piece of software and a single user interface. This workflow would 'guide' call handlers through calls and semi-automate many of the processes they now do manually.

The results are:

- A streamlined working environment for call handlers, meaning less training time,
- A consistent approach to all interactions no matter their source – crucial for compliance and quality,
- A faster response to callers as call handlers do not have to switch between systems to perform tasks and find information.

Empowering call handlers

Digital transformation is not just about adding new channels for users.

The actions taken by 9-1-1 call handlers can, literally, be the difference between life and death. A stressful responsibility, but technology innovations can help them provide a fast, effective, and consistent emergency response. On the other hand, outdated technology can hinder that response.

Dispatchers naturally do their utmost with the technology that is in place, but sometimes their best efforts may be undermined by lack of investment in hardware, software, training and personnel. [Research reveals that 9-1-1 operators are susceptible to PTSD.](#) So, it is no surprise to learn that understaffing and high staff turnover are common challenges in the public safety sector, where it is not rare for [ten people to be hired with the expectation that only five will commit](#) long-term to the role.

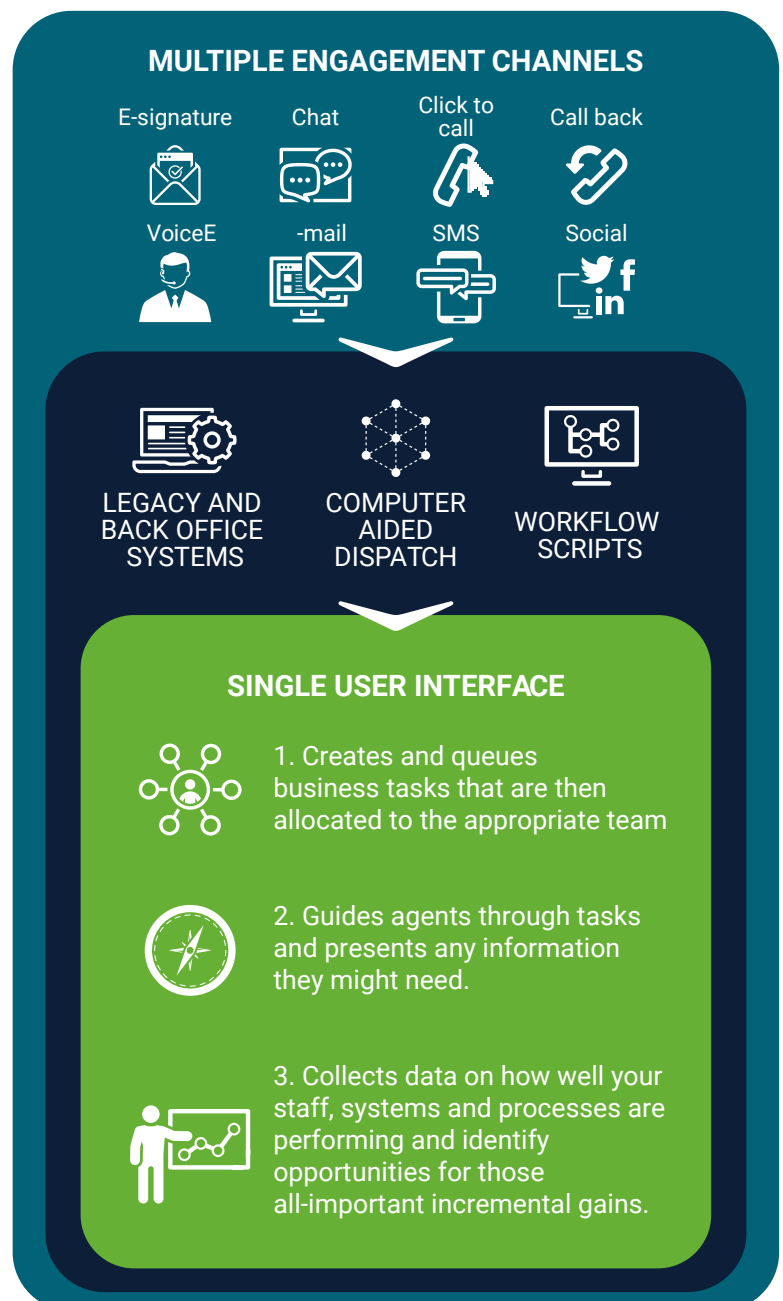
In an ideal world, dispatchers would not be hampered by legacy systems, some of which may not have seen a makeover since their installation decades ago. Most of these systems require dispatchers to juggle multiple applications, screens and processes, many of them manual, which present risks of errors, duplication of effort, and unnecessarily extends call times.

When dispatchers must refer to paper-based rulebooks to know what steps of a process such as an IAED protocol come next, or what questions to ask, it means they must turn away from their screens. This can lead to human error – it is easy to miss questions or skip those that don't seem significant in a pressurised situation. Such an oversight could gravely affect the outcome of the call and lead to dispatcher liability.

Inconsistency is also a concern, as each dispatcher will be working to different standards. Some will naturally be more experienced, enabling them to triage calls more effectively. Having a less experienced dispatcher should never be the difference between saving a life or not, but regrettably it could be.

As the systems and technologies used by emergency dispatchers get more complex, they must be given tools which simplify and systemise the job, particularly when new channels are added into the mix.

Digital transformation tools such as APIs (Application Programming Interfaces) and RPA (Robotic Process Automation) allow for legacy systems to be integrated with modern user interfaces and other systems. This makes it possible for dispatchers to access all channels, all legacy systems, the CAD (Computer Aided Dispatch), and workflow scripts from a single interface.



Control

The most common complaint among the many PSAPs we have spoken to is that they cannot write medical workflows or introduce changes to enhance and optimise response for incoming emergency calls – over any channel.

A desktop workflow system allows emergency response teams and physicians to ‘own’ the responsibility for how they process and set priorities for all medical emergency calls and multimedia interactions. Teams and physicians can now set priorities for emergencies and refine response processes with critical efficiencies to improve response.

Whatever workflow software you use to do the job should be seamlessly integrated with the incoming channels and with the Computer-Aided Dispatch (CAD) systems and have a high degree of flexibility.

It should also capture the detail of every interaction to enable managers and specialists to analyse performance and adjust workflows over time to achieve continuous improvement. Such powerful data insights can deliver ongoing and measurable gains in dispatch times, resource accuracy, caller experience and operational efficiency.

In the next sections we will look at how such a workflow system can improve the key questioning and dispatch phases.



3. Case entry, key questioning, and dispatch

Next Generation 9-1-1 (NG9-1-1) encourages PSAPs to use technology to provide a more convenient and effective service to the public.

While making use of digital channels opens new access possibilities for people who need to contact emergency services, workflow software brings the power of technology to dispatchers whose job is becoming more complicated, stressful, and difficult by the day.

Triage workflow

When a call handler takes an incoming call (or email, chat, or SMS) the first job is to perform a basic triage, which involves opening a case and asking key questions. The objective is to determine the best course of action as quickly as possible and dispatch the necessary resources. Further questioning, or guidance of the caller, may then continue until those services arrive.

At its most basic level, making an initial assessment is a question and answer exercise. Doctors and nurses can call upon years of training and experience to know what questions to ask, what the answers might mean, and what further information to gather. Even a well trained

dispatcher is unlikely to have the same level of experience to call upon. That is why they rely on reference materials that allow them to look up information.

When dispatchers have to rely on ring binders or a rolodex to do this, the process is slow, cumbersome, and prone to error. What's needed is a computerised 'triage' system that prompts dispatchers to ask certain questions based on the patient's answer to previous questions. At the end of this flow of questions and answers, the system prompts the dispatcher to take the correct action. The beauty of the system is that the dispatcher needs no medical knowledge at all, just a knowledge of how to use the software.

The conclusions the system arrives at are pre-determined (by the healthcare professionals who create the workflows) and so completely consistent. With a paper-based system, each agent could interpret each answer differently, and ask different questions, therefore arriving at different assessments. With a computerised system the danger of taking inappropriate actions due to an incorrect assessment is eliminated.



Triage workflows provide a single-user interface to systems, including the CAD (Computer Aided Dispatch) and provide detailed guidance to dispatchers during calls. The triage workflow prompts the dispatcher to ask the right questions, and automatically moves to the next question depending on what the dispatcher inputs. This ensures the nature of the call is correctly identified, leading to the correct response being provided. Having these workflows in place reduces human error, creates uniformity and saves tremendous amounts of time by enabling dispatchers to get through calls quickly and accurately.

Appropriate data and tools are presented to dispatchers when they need them in the workflow interface, eliminating the need to switch applications or flip through paper. Dispatchers are empowered to engage with callers intuitively, providing responses that are consistent and compliant with regulatory requirements.

Having got used to this way of working with commercial contact centres, it was a surprise when we saw the US's largest and busiest 9-1-1 command centre still using paper-based scripts and rolodecks to triage incoming calls.

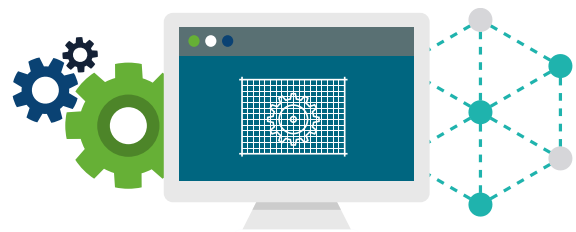
A screen-based system that can automatically move on to the next step depending on what the dispatcher inputs saves an enormous amount of time in each call, and improves accuracy, consistency and speed of response. It's also much easier to update the system and manage version control.

Benefits of triage workflows

- Enable dispatchers to respond faster and more consistently by providing them with a single user interface to various systems, including the CAD.
- The software also provides intelligent guidance during each call, prompting the dispatcher to ask the right questions or take the appropriate actions based on the caller's responses.
- In the workflow interface, appropriate data and tools can be presented to dispatchers, rather than them having to go look for them or switch applications.
- Crucially, all workflow scenarios can be edited and created by medical personnel and management with no need for coding, giving PSAPs complete control over their emergency response processes.

Code determination and dispatch

Integration with CAD systems gets the right emergency resource on the road as quickly as possible and ensures first responders have the correct information every time as text messages can be standardised.



All the information gathered in the workflow used to guide the call can also be packaged up and sent to the CAD. This ensures that emergency workers on the ground are given Post-Dispatch Instructions (PDIs) and Pre-Arrival Instructions (PAIs), as well as any additional information gathered after the initial dispatch is made.

As the workflow software is able to 'push' messages to the CAD system using the correct codes – so dispatchers don't have to do it by hand, thus eliminating errors and saving times. Messages can also use consistent, pre-defined wording which further eliminates errors and misunderstandings.

Once integrated at the desktop via a local connector the workflow can capture call information including caller ID and populate the CAD in real time, without the dispatcher having to switch applications. This integration allows for two-way comms, meaning emergency services can escalate and overrule.

For additional security and fail-over, a local log 'mirrors' the workflow application so that if connectivity is compromised work continues uninterrupted.

The two major benefits of semi-automating the dispatch process in this way are:

- Increased speed and efficiency – correct dispatch codes are often determined within a minute of the start of a call. Dispatches are automatically queued as soon as the system

recommends an appropriate Determinant Code. This can happen during the case entry or key questioning phase, or once all questions have been asked and answered.

- Reduce errors and liability risks – every question for every type of emergency is pre-set, and all answers are recorded. Information is presented to first responders in a consistent way regardless of which call taker handled the call, simplifying their job at least a little and increasing their safety. The system analyses the information collected to determine PDIs and PAIs for each case.

With the workflow and CAD integrated in this manner, call handlers can more easily comply with IAED protocols. The workflow and CAD can present call handlers with questions and instructions in the correct order. The workflow can even skip questions that are not appropriate and automatically answer questions that have previously been asked, for example if the call handler has switched from protocol to another. This level of automation frees up call handlers to focus on providing the best service to the caller.

Triage workflow integrated with the CAD can enable call handlers to answer calls and dispatch services faster, more accurately, and more consistently. The final crucial part of the process is continuous improvement of the service based on insights gleaned from data.



4. Analytics and performance improvement

In the emergency centre environment, meeting the public's needs is the primary concern. Our time in the contact centre and customer service world has taught us that constant improvement by marginal gains is crucial to transforming service levels long-term.

In commercial contact centres, KPIs will be defined and measured to assess the company's progress towards its commercial goals. In our experience, the use of similar KPIs – analogues of customer satisfaction, NPS (Net Promoter Score), and customer effort – in 9-1-1 centres is less prevalent. Analytics, however, can provide a rich source of data to inform improvement processes, so should be adopted.

In PSAPs the most critical KPI is time to answer, which should always be just a few seconds. 9-1-1 centres, compared to their commercial counterparts, are over-resourced for this very reason. Average handling time, on the other hand, is far less important as the call handler might have to stay on the line to talk the caller through

a situation or provide guidance until the emergency services arrive.

Whatever goals are chosen at an operational level, managers, team leaders, call handlers, trainers, and medical personnel need rich, accurate data to understand what is happening and make improvements.

Analytics

The workflow software captures the detail of every interaction to enable managers and specialists to analyse performance and adjust workflows to achieve continuous improvement.

A simple and user-friendly reporting interface brings data together and assembles it into a single, coherent search engine. Users can quickly and easily retrieve and configure data for querying and reporting, all from a single access point.

Users can structure and group related data together on-screen, incorporating logos, pictures, images and text with fully customisable dashboards. Every call, question and response, and every action taken is recorded, making them auditable for compliance and analysable for performance improvement.

The analytics suite should be able to provide fast and accurate analysis of data collected during the call process. Indicators such as user performance, Average Call Handling Time, calls by facility, calls by type should be available and presented via configurable graphical interfaces.

Additionally, data can be collected on an individual, team, and department level and broken down and presented in any number of reports, all of which can be drilled into by management to tease out operational insights. This can enable everything from personalized one-on-one coaching, QA and compliance monitoring, as well as goal setting at the individual and team level.



Simple Querying

Filter results and search for values using natural language or selecting values on the screen in real time.



Drill Down into Detail

Drill across interactive reports to build storyboards of information. Drill all the way through to transactional level data and everything in between.



Cross Tabs

Multi-dimensional crosstabs are configurable on-demand, with conditional formatting, alerting and advanced calculation functions.



Secure Information Access

Industry-grade security controls including single sign-on, realm-based security and Windows Active Directory support.



Venn Diagrams

Use interactive Venn diagrams to build complex segments of information through an easy-to-understand visual interface.



Data Collection

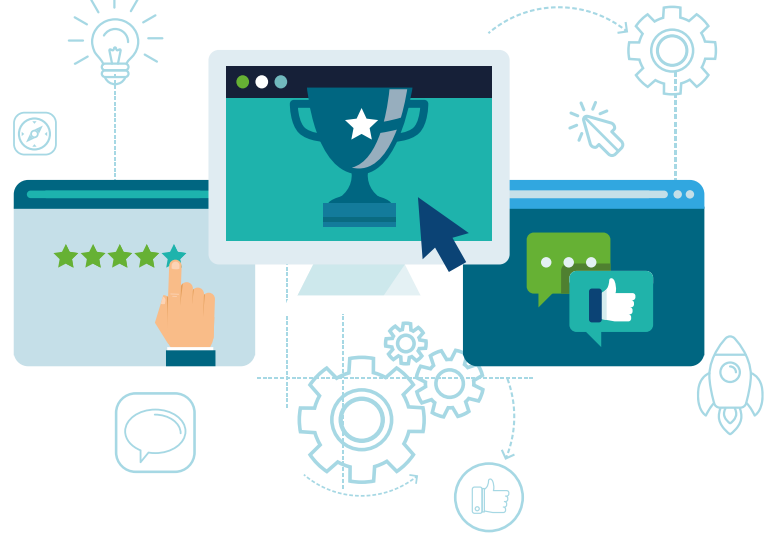
Built-in data entry capabilities through an enterprise-grade form builder. Embed forms into reports to log outcomes and streamline processes.



Interactive Infographic Reporting

Every business analytics tool has dashboards, but few are flexible, simple and comprehensive. With the ability to position data anywhere on-screen in a variety of formats, users can structure and group related data together to incorporate logos, pictures, images and text as if typing data into a publishing package.

5. Benefits



It is no longer tenable for 9-1-1 emergency centres to continue to overlook technology that has proven itself in commercial call centres to answer the very challenges they are now seeking to meet.

While training, systems, processes, head counts, and many other factors contribute to the success of any center, new technology investments have been shown to have the biggest immediate impact on performance.

In our experience of deploying the technologies discussed above in the world's largest contact center outsourcers, we often see productivity gains of up to 20%. We have witnessed similar improvements since we implemented our triage workflow solution with the largest 9-1-1 dispatch center in the United States – processing time went down by 6.7 seconds for all calls and by 3.6 seconds for high priority, potentially life threatening calls.

Flexible workflow and scripting software for case entry, key questioning, and dispatch – particularly with CAD integration – enable managers and medical personnel to completely customise emergency responses without recourse to IT.

Software can promote consistency, enable data capture and analysis for continuous improvement, and improve efficiency by reducing call length, slashing training times, and eliminating wasteful processes.

Improve PSAP operations

- Integration with existing environments allows call handlers to do more with the technology
- One system can be scaled across multiple sites to consolidate operations
- Automation of processes reduces waste and lowers costs
- Training times and costs decrease as call handlers only use the one system

Enhance call handler satisfaction and efficiency

- Streamlines processes, allowing call handlers to answer queries, access insurance information, schedule appointments etc.
- All information call handlers need is at their fingertips, so no time wasted juggling multiple applications and processes.
- Leads call handlers through calls by simple question, answer, information prompts, resulting in positive agent experience and faster, more accurate interactions.

Intelligence to continuously improve performance

- Use insights to improve services, processes and patient journeys, with a view to increasing revenues and profits whilst reducing costs
- All call data is captured and stored for reporting purposes
- Customisable, visual formats makes it easy to spot trends and problems



Improves 3 main areas:

- Resources: optimised to ensure you meet cost to serve targets
- Performance: improved to ensure you meet quality of service targets
- Patient experience: enriched to ensure you meet satisfaction and loyalty targets

In 9-1-1 emergency centers, meeting callers' needs as quickly as possible is the primary concern. Our experience in the commercial contact centre and customer service world has taught us that improvements in service levels, diversification of services, better working practices, new processes that put callers and call-handlers first – all of these have been accompanied and made possible by new technologies that assist call handlers to do their jobs more effectively and more efficiently.

Up until now, the world's most agile and powerful contact centre technology has been used to help people shop, eat and navigate, but it has not been used to power emergency call systems.

With NG9-1-1 bringing with it an increase in complexity of the dispatcher's role, isn't it time to change that?

6. About Infinity


Our workflow and scripting software helps organisations customise their interactions with customers, patients, and the public, while ensuring consistency, accuracy and speed.

We help large organisations in fast-paced, complex environments like healthcare and public safety that are providing critical services to communicate with patients and the public more accurately, quickly, and consistently by providing workflow and scripting software that they can use to help front-line staff handle all predictable scenarios in a consistent way.

Our mission is to help PSAPs improve their quality of response via telephone and other channels by providing workflow and scripting software that the client can completely customise, without recourse to IT, and use to promote call handler consistency, capture data and analyse it for continuous improvement, and further improve efficiency by eliminating wasteful processes.



To arrange a demo of Infinity Response, and discuss how we can adapt it to your needs, please get in touch.

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