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THE INSIGHTS DRIVING CITIZEN CONTACT CENTRE TRANSFORMATION

Unlocking the value in police and public sector contact centre data

CONTENTS

INTRODUCTION

Police and other public sector organisations are today recording and storing an ever-increasing volume of contact centre audio data from telephony and other sources. This data presents particular processing challenges because it is highly sensitive, and often, time-critical. Traditionally, voice-based content has been viewed as a cost rather than a source of valuable insight. Today, this data has the potential to reveal knowledge that can improve service quality, resource management, reduce fraud risk, provide healthier work environments, and more effectively manage increased customer demand.

The British public depends on contact centres; they are integral to the delivery of vital public sector services in the UK. There is huge demand for telephone-based services, despite the ubiquity of the Internet; the majority of the British public (58%) still reach for the phone to talk to another person when they want answers to urgent and complex issues.[1]

Services such as 999, 101, 111, HMRC, Jobcentre Plus, and the Driver and Vehicle Licensing Agency (DVLA) receive collectively over 100 million calls per year. Contact centres must therefore be able to deliver critical services at scale, while facing additional pressures to operate efficiently, reduce risks from fraud, and protect staff from undue stress.

While organisations continue to recognise the value in analysing audio data, today's multi-channel contact centres also handle video, social media and webchat communications. For example, the Metropolitan Police Service now lists online contact options on its website contact page and operates around 20 social media channels including WeChat for speakers of Chinese.

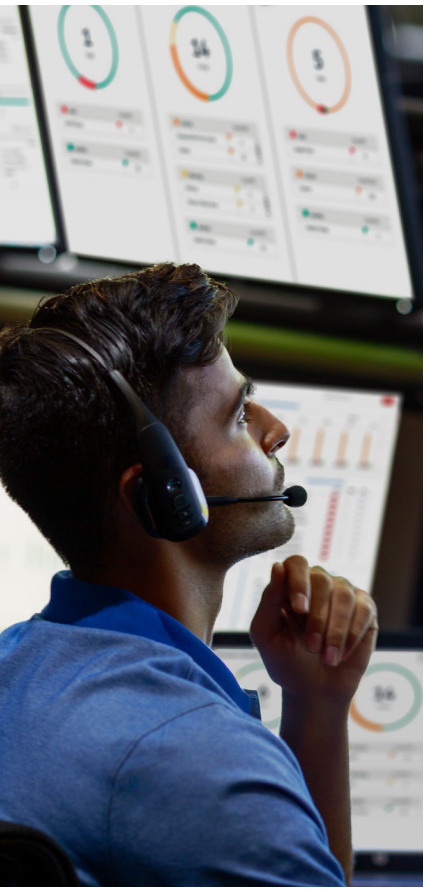
However, recording conversations and converting them to text is often only the first step in realising the value of audio content. A new generation of speech technology is turning this data into insights that can enable contact centre transformation. Using modern analytic techniques, operating on the output from automated speech recognition (ASR), it is now possible to unveil important trends, patterns, and themes that were previously hidden or difficult to access. Where ASR can be delivered at scale and speed, ideally in near-real-time, it can enable public sector organisations to be more productive and to make better-informed decisions.

The challenges faced by public sector contact centres have been brought sharply into focus by the global COVID-19 pandemic. Government protective measures, such as the closure of businesses and public buildings and reduced contact among the public, has led to increased reliance on telecommunications. Public sector contact centres are playing a more vital role in delivering services than ever before, with call volume "through the roof" according to the Call Centre Management Association.[2]

Additional strain is now expected as the country faces the new challenges of recession, bringing with it increasing fraud risk to all organisations that handle money.[3] Speech and communication technologies can be used to help spot unusual patterns surrounding business and individual claims, for example, and identify sentiment during conversations, allowing staff to more easily identify both positive and negative interactions.

Speech and analytical technologies are ready to help public centre contact centres start using their audio and wider data to transform operations and rise to the challenges ahead. This white paper discusses the challenges faced by public sector contact centres and how technologies can help solve them.

[1] Accenture. 2020. COVID-19: Responsive customer service in times of change. Available at: https://www.accenture.com/gb-en/about/company/coronavirus-responsive-customer-service
[2] The Economist. 2020. Britain's call centres are overwhelmed and overhauling how they work. Available at: https://www.economist.com/britain/2020/04/04/britains-call-centres-are-overwhelmed-and-overhauling-how-they-work
[3] Simmons & Simmons. 2020. Fraud in the time of COVID. Available at: https://www.simmons-simmons.com/en/publications/ck8k5nooe0xul0a269v7zjn0s/fraud-in-the-time-of-covid-19



CASE STUDY: LANCASHIRE CONSTABULARY

Audio insights driving efficiency

Lancashire Constabulary engaged HPE Pointnext Services to help the police gain insight into emergency and non-emergency calls. By collaborating with HPE and partner Intelligent Voice to build a speech-to-text analytics solution based on machine learning, the Constabulary gained valuable statistical insights into all calls, helping the police improve efficiency and effectiveness in serving the public.

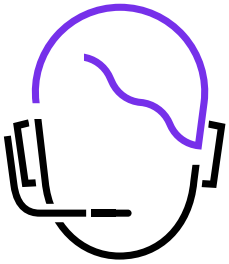
Every one of the 1.2 million calls received by Lancashire Constabulary each year is recorded, but only operational calls are formally logged. All others—about 600,000 calls per year—are unlogged. These calls are referred to as 'failure demand', and consequently there was no way for the police to know the nature of all those calls, or if they were handled correctly.

Seeking to gain more insights into the unlogged calls, Inspector Andy Doran, a lead member of the Futures Team, reached out to HPE Pointnext Services. "We did some work with HPE Pointnext Services previously and understood their capabilities and professionalism. We wanted advice on how to approach our problem, and they were very quick to respond," remarked Inspector Doran.

HPE brought in technology experts from their Center of Excellence in Europe and did a lot of listening to understand the Constabulary's problem, data environment, and objectives. HPE Pointnext Services assembled a project team comprised of computing engineers, data scientists, and speech-to-text experts from software partner Intelligent Voice. The team built a prototype voice analytics solution, using a sample of archived audio and worked with the Lancashire Constabulary team to define key words and phrases that the software could listen for and extract to create categories.

With the data extracted from the audio files, HPE Pointnext Services next built a dashboard with Lancashire Constabulary, combining approximately 20 call categories with metadata such as the time and day of each call, duration, and operator ID. After the data was cleansed, it was revealed that 60% of non-emergency calls were unlogged, accounting for 40% of overall contact centre workload. The data also showed a spike in non-emergency calls each night at 10:00 p.m. Further research showed 3% of demand related to mental health cases, consuming about 5% of call centre time.

Armed with these insights, Lancashire Constabulary are now able to explore alternative contact options to reduce non-emergency demand. "We always have the ambition to be an outstanding police force," says Chief Superintendent Ian Dawson, Head of Change at Lancashire Constabulary. "Last year we were graded outstanding in efficiency by Her Majesty's Inspectorate of Constabulary, particularly around our ability to understand demand and utilise our funding to provide the right resources to deliver service to the public." Intelligent Voice, partnering with HPE Pointnext Services and Lancashire Constabulary, also won the "2020 Security Innovation Award" for speech recognition and analysis to categorise calls.



THE CHALLENGES FOR PUBLIC SECTOR CONTACT CENTRES

Managing demand

Demand on public sector contact centres changes dynamically with seasonal and unexpected events, such as times of crisis and recession. For example, in 2011 Her Majesty's Revenue and Customs (HMRC) required 1,500 extra contact centre staff to meet a temporary spike in demand during Tax Credits renewal season.[4]

Further, contact with public sector organisations is often more complex than with services such as banking or utilities, where contact generally revolves around simple transactions. There may be multiple reasons for contact in a single conversation between a citizen and adviser; some of those reasons may be valuable and important, some less so, and a proportion will be fraudulent.

Within these parameters, public sector contact centre operations more than ever need support to deliver effective services. In the case of 101, police forces are collecting a substantial volume of calls where the reason for the call is not police business and should be served by a partner organisation such as the local authority or National Health Service (NHS). In other cases the call cannot be serviced due to legislation, for example when a custody enquiry is made about an adult who has been detained. In the case of the UK's 999 emergency service, "around 35% of calls do not involve actual requests" for police help, emergency or otherwise.[5]

With modern technologies, public sector contact centres can now process multi-intent calls to discern the reasons for contact, aid advisers in handling calls more effectively, and accurately log caller intents based on audio analysis. This delivers a more complete view of demand for contact centre services.

Fraud and risk

The National Crime Agency finds that fraud may be costing the UK public sector more than £40 billion annually.[6] All organisations that deal with money have fraud exposure and contact centres are a major attack surface; fraud executed via contact centres has increased by 350% over the past five years.[7] Criminals are using personal and financial information stolen in data breaches, which are a "key enabler of fraud",[8] to gain access to accounts secured by weak knowledge based authentication (KBA) systems such as passwords and secret questions.

[4] Martin Lewis. 2011. Avoid tax credits hotline hell: the best times to call. Available at: https://www.moneysavingexpert.com/news/2011/07/how-to-avoid-tax-credits-hotline-hell/
[5] BT. 2017. Facts and figures to celebrate the 80th birthday of 999. Available at: http://home.bt.com/news/news-extra/some-excellent-facts-and-figures-to-celebrate-the-80th-birthday-of-999-11364192325905
[6] National Crime Agency. Fraud. Available at: https://www.nationalcrimeagency.gov.uk/what-we-do/crime-threats/fraud-and-economic-crime.
[7] Raconteur. August 2020. Fraud & Privacy. Available at: https://www.raconteur.net/fraud-privacy-2020
[8] National Crime Agency. Fraud. Available at: https://www.nationalcrimeagency.gov.uk/what-we-do/crime-threats/fraud-and-economic-crime.

Organisations in the public and private sectors have in the past depended on voice biometrics (VB) to reduce the fraud risk and strengthen security in the authentication step and in anti-fraud efforts. But VB has weaknesses: it requires enrolment and usually falls back on weak KBA for those who have not enrolled. VB is also ineffective in detecting previously unknown fraudsters, because it depends on recognition of known voices and can be tricked by voice obfuscation.

Today, organisations are responding by deploying evolved fraud detection solutions that measure dynamic behavioural characteristics to identify risk[9] — a key example being conversational analytics, building on speech to text technology, which seamlessly measures characteristics that are consistent with deceitful behaviour.

Dishonest behaviours can affect the public sector in ways other than outright fraud. Hoax calls to the police, fire or ambulance services are made to lure staff to dangerous locations. Nuisance calls to the emergency services slow down responses to genuine needs. Using technology to assess the credibility of individuals calling public sector services can help to reduce these risks.

Quality of service

Measuring and improving service quality has become a priority for public sector organisations. Contact centres are being asked by the UK Government's Public Value Framework to demonstrate value for money.[10] Many call agents are in their roles to help deliver better outcomes for the public, which has increasingly high expectations of what the customer experience should be.[11]

While positive steps have been made, research suggests organisations need further improvement to effectively handle what are often complex, emotionally charged situations. A 2019 Her Majesty's Inspectorate of Constabulary and Fire & Rescue Services (HMICFRS) inspection of police control rooms found inconsistencies in how forces resolve calls and respond to vulnerable people.[12]

Contact centres need to measure performance if they are to improve quality of service and demonstrate both value for money and customer satisfaction. Organisations need a review or audit system that identifies instances of low customer satisfaction, so that action can be taken, and high customer satisfaction, so that best practice can be shared and high-performing agents can be recognised.

Duty of care

Protecting the health and wellbeing of contact centre employees is a legal duty; employers need to provide a safe working environment and take mental health issues seriously.[13] In addition, protecting employees' health will likely increase staff retention, boosts productivity, and improve engagement.[14]

Callers to public sector contact centres are often in distressing or emotionally charged situations. Agents in police contact centres must handle calls from victims of serious and violent crimes. Customers of Her Majesty's Revenue and Customs (HMRC) and Department of Work and Pensions (DWP) contact centres may have just received bad news about their tax affairs or benefits. Customers of the DVLA may have lost their right to drive, impacting their livelihood.

Supporting distressed customers every day can have a substantial adverse effect on employees' mental health, often building up gradually over time. Modern analytics and review technology can help organisations to fulfil their employee duty of care responsibilities by analysing behaviour to detect when call handlers are affected by traumatic audio, so that the right support can be provided; and by automating call reviews, thereby providing a safer work environment by reducing the time staff spend listening to traumatic material.

[9] Gartner. 2019. Market Guide for Online Fraud Detection. Available at: https://www.gartner.com/en/documents/3912865/market-guide-for-online-fraud-detection

[10] HM Treasury. 2019. The Public Value Framework. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/785553/public_value_framework_and_supplementary_guidance_web.pdf

[11] McKinsey. 2019. The global case for customer experience in government. Available at: https://www.mckinsey.com/industries/public-sector/our-insights/the-global-case-for-customer-experience-in-government

[12] Her Majesty's Inspectorate of Constabulary and Fire & Rescue Services. 2020. Police control rooms are in danger of being overwhelmed by the demand they face. Available at: https://www.justiceinspectorates.gov.uk/hmicfrs/news/news-feed/police-control-rooms-are-in-danger-of-being-overwhelmed/

[13] Acas. Supporting mental health in the workplace. Available at: https://www.acas.org.uk/supporting-mental-health-workplace

[14] Acas. 2012. Defining an employer's duty of care. Available at: https://archive.acas.org.uk/index.aspx?articleid=3751

Regulatory compliance

One of the major implications of the introduction of new data privacy regulations in recent years, including General Data Protection Regulation (GDPR) is that decisions made with the help of algorithm-based technologies must be explainable and defensible. So that those impacted by decisions can challenge and understand them. Solutions must offer decision support and not decision automation. Customers who are impacted "by a decision supported by an Artificial Intelligence (AI) system should be able to hold someone accountable for it."[15]

THE SOLUTION: CONVERT CONTENT TO VALUE

Rapid innovation in the world of speech technology means that wherever audio content has the potential to reveal insight about customer needs, service quality, demand levels, or anything else an organisation needs to know, the technology is already here or rapidly emerging.

Speech technologies tend to be service-and software-based and run on industry-standard server infrastructure on premises or in the cloud. Best-fit solutions integrate speech technologies that solve specific challenges with infrastructure that can adapt to changing needs and service demand levels. HPE's approach is to partner with innovators, including global speech technology leader Intelligent Voice, and integrate end-to-end solutions built on industry-leading HPE infrastructure and HPE Pointnext Services.

Some of the technologies transforming contact centre operations are discussed below.

GPU-accelerated speech recognition

The first step in unlocking the value of stored audio data is processing and preparing it for analysis. Speech recognition is foundational for speech technology solutions; accelerating it delivers faster insights and agent assistance, plus new capabilities such as concurrent multi-lingual transcription.

Graphics processing units (GPUs) accelerate speech-to-text audio processing, on premises or in a private cloud, at scale and without the need to transport data to public cloud services. GPUs are essentially large groups of small processors that can carry out many processing jobs at once, in parallel with the central processor. With current solutions, this parallel computing approach can transcribe up to 1,200 hours of audio per hour[16].

Processing audio on premises also means having greater control over where data resides and security policies. It can also support compliance requirements.

[15] Information Commissioner's Office. 2019. Explaining Decisions Made with AI. Available at: https://ico.org.uk/media/about-the-ico/consultations/2616434/explaining-ai-decisions-part-1.pdf

[16] Intelligent Voice. https://intelligentvoice.com/#gpu-technology

Voice biometrics

It isn't always possible or desirable to personally identify every contact centre customer. But it is useful to identify which participant in a conversation is speaking and to locate other calls featuring the same speaker.

Text-independent voice biometrics technology provides "attribution despite anonymity": the power to profile an unidentified voice, attribute utterances in a conversation to that voice, and accurately search for the same voice in other recordings.

Imagine receiving a data subject access request from a customer who has called your service 20 times over the past year. You have all the call recordings, but not the metadata to identify the caller in all of them. Voice biometrics technology can search your archive and suggest the recordings most likely to feature the customer.

Consider a police investigation in which phone conversations have been lawfully intercepted across a two-month period. Only 5 of the 400 intercepted calls involve the suspect. Using voice biometrics those calls are identified and crucial evidence is discovered quickly, without the need for officers to spend hours reviewing recordings.

Smart audio transcription

"Speech to hypertext" is a useful way to think of smart audio transcription technologies, which represent an evolution of standard speech-to-text solutions. The SmartTranscript solution from Intelligent Voice, for example, provides clickable links within the transcript that navigate to the related parts of audio.

More importantly, SmartTranscript can identify topics discussed in a conversation and find alerts for specified keywords. Reviewers can click topics and alerts to navigate to that part of the audio. Organisations can identify calls of interest, based on topics and keywords they define, and prioritise those calls for further review.

Increasingly, organisations are communicating with customers and partners via web-conferencing tools such as Zoom. If the organisation retains recordings of the conversations, SmartTranscript can be used to rapidly assess and review audio, as captured in these new and rapidly growing channels of communication.

SmartTranscript is agile in adapting to new requirements. In a scenario where an unanticipated issue is affecting customers, such as a data breach, SmartTranscript can find all conversations where "data breach" was the topic or where the term was mentioned. Those calls can be reviewed faster than before because reviewers can navigate straight to the parts that discuss the topic.

The technology can also discover things that the organisation and its human call reviewers were oblivious to. In a US jail that had deployed an Intelligent Voice machine learning solution, the system flagged the term "three-way" as a common non-trivial phrase in prisoners' phone calls. Prison officials later worked out that doing a "three-way" was code for dialling a third party into the call.[17]

[17] New Scientist. 2016. Prisoners' code word caught by software that eavesdrops on calls. Available at: https://www.newscientist.com/article/mg23030762-200-prisoners-code-word-caught-by-software-that-eavesdrops-on-calls/

Conversational analytics

Conversational analytics, such as that delivered by Intelligent Voice's LexiQal product, identifies behavioural characteristics of speakers in recorded speech. The analysis provides insights into the speaker's credibility, emotional state or behavioural changes that are significant in context, as well as the sentiment behind what is said, with a high degree of accuracy at utterance level. The insights are valuable across both sides of the call, agent and customer alike, and support use cases such as fraud detection and measuring customer satisfaction levels. LexiQal was developed with funding from UK Research and Innovation (UKRI); ongoing research aims to improve its efficiency, automation, and transparency.

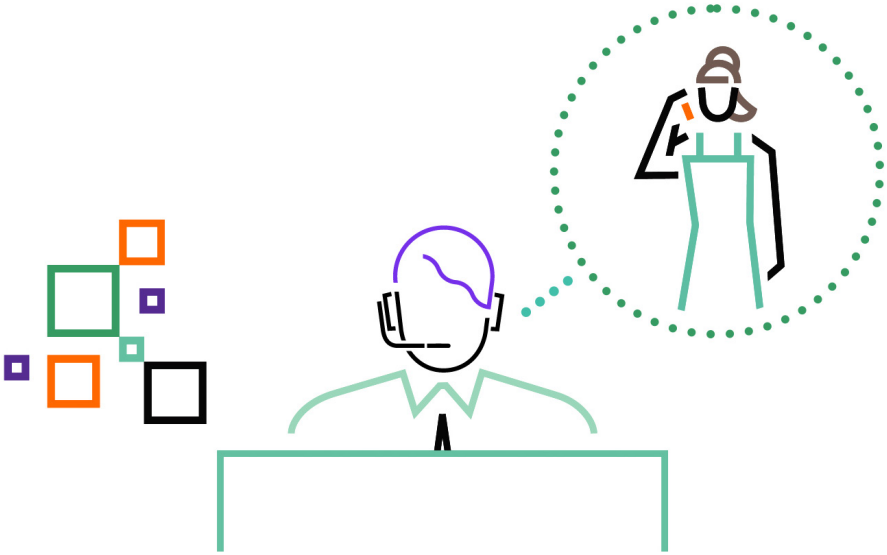
Conversational analytics works by detecting patterns in speech via markers, such as answering a question with a question, hesitations or answering questions too slowly. The technology automatically identifies these conversational features, weighs their significance, and makes recommendations. Recommendations should only be used to inform human-made decisions to act or not.

Flexible infrastructure

"Pay-as-you-use" IT as a service solutions, such as HPE GreenLake cloud services, are enabling public sector organisations to deploy agile speech technology solutions without the need to purchase expensive hardware. HPE GreenLake delivers cloud economics on premises, a pay-per-use model with no capital needed up front, and no overprovisioning of infrastructure, which is better aligned with business outcomes. The solution provides managed on-premises infrastructure, supporting regulatory compliance needs and providing control over data and security. Customers can scale infrastructure flexibly as service demand changes.

The future is real-time

Speech technologies are getting faster with every generation. Because of the growing power of GPU technology and significant recent advances in speech recognition algorithms, real-time speech processing and analytics for sensitive client data is now coming on stream on a commercial basis in the data centre. Real-time speech analytics will provide actionable insights during a live call, both assisting agents and alerting supervisors when their intervention is needed.



NEXT STEPS

Public sector contact centres deliver essential services to millions of people across the UK. The challenges faced by these contact centres are the challenges faced by the world—they are social, financial, unpredictable, fast-changing, and highly demanding.

Contact centres must keep adapting and growing in capability to meet increased demand and tackle new problems. Organisations are already collecting the audio data they need. By employing speech technologies, they can put that data to work and extract the value within, learning more about citizens' needs, their own performance, where resources are being wasted, and how to protect against risk.

Speech technology solutions are increasingly accessible. They run on industry-standard servers. Organisations do not need to design or run them alone, but can deploy flexible, managed, pay-as-you-use solutions by partnering with experts such as Intelligent Voice and HPE.

By talking to experts, organisations can assess opportunities available to them and access the best speech technologies on which to build the next generation of public sector contact centre services.

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