



Digital Transformation

Next Generation Emergency Communication

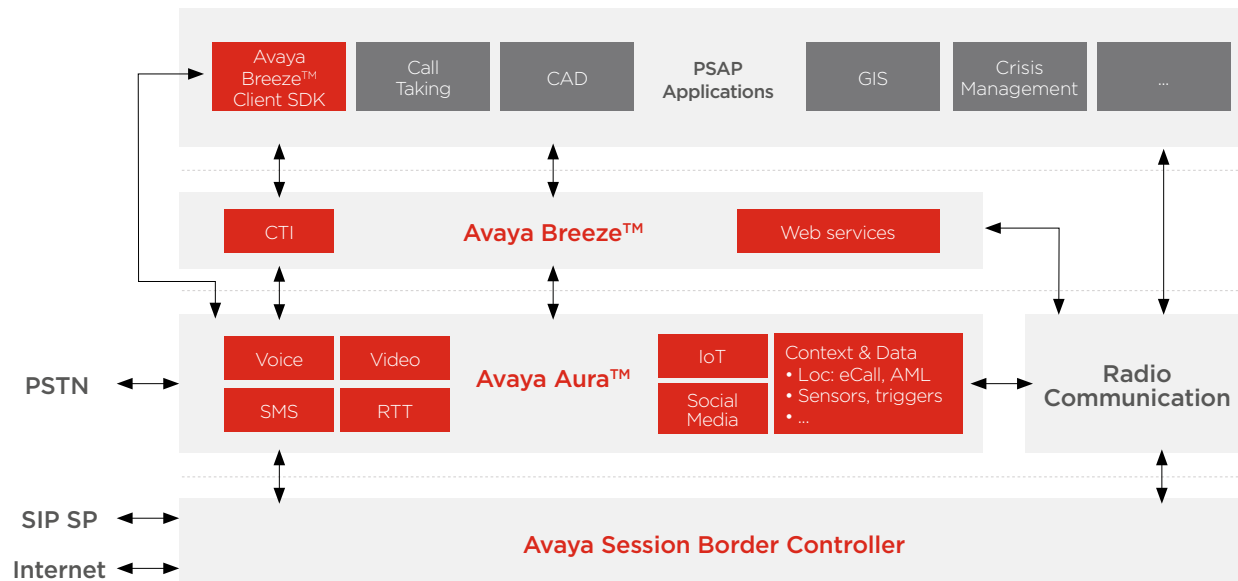
Emergency Services as drivers for a new universe of communication and interaction with citizens in emergency situations

Emergency Services' Digital Transformation for an advanced multi-channel citizen engagement

A key element for Digital Transformation in Public Safety and Emergency Services is to focus on interaction and engagement processes with callers in need of support and help. Currently the industry is experiencing **three compelling transformations** that will generate momentum towards innovation.

1. Citizens are changing their preferred channels for everyday communication switching over the last decade from phone calls to **text** and **visual-centric ways to interact** with each other and exchange information. On the other side, communication with emergency response services stays focused on spoken language, probably the most direct way of human interaction.
2. The European Union is about to update the Universal Service Directive, leading the regulatory baseline for 112 emergency calls towards a legal framework more compliant with digital age. The new text, to be introduced as the **European Electronic Communication Code (EECC)**, is expected to regulate the industry from 2020 and beyond. The EECC also aims to extend emergency communication capabilities and reach, accordingly to changed communication behaviors and citizens' expectations.

The new 112 will fully embrace location-aware communication, first introduced in 112 with **eCall**, providing automated calls from cars involved in accidents. A second step is **AML (Advanced Mobile Location)** which has been already introduced in some European countries and will help locating callers using modern smartphones. EECC will add Public Warning as an element of **Reverse 112**, as well as providing full



- A full feature cloud-based contact center as a service solution:
- True multi-tenant customer experience
 - Uses standard Avaya software
 - Flexible deployment options
 - Scalable for seasonal ebbs and spikes
 - Usage-based pricing

accessibility, especially for deaf people, as well as citizens with speech disabilities. The accessibility project is summarized under the concept of **Total Conversation**, moving beyond voice communication by adding visual communication with **Video** and **Real-Time-Text (RTT)**.

3. From an overall European perspective, **transnational collaboration** support will be another area to focus on, as well as enhanced access to emergency services **from private networks**. This element is a solution to address **and support** the transition from ISDN communication to Voice over IP with SIP with most major European Service Providers, and is considered the **third compelling transformation** for driving innovation, preparing the ground for the introduction of **Next Generation 112 (NG112)** being the ultimate goal for the industry.

New framework for Next Generation Emergency Services

Using localization data, AML is well suited to support emergency calls, but is not the only option. Leveraging **HTML5** location-aware web applications as an added service to regular 112 voice calls as well as using **Apps**, these mechanisms will also have the potential to enhance **non-emergency communication** in non-112 situations where proper knowledge of the caller's location is crucial.

Total Conversation is addressing needs of a specific group of citizens and it is also expected to increase the use of **Multi-Channel access** in emergency services, including **Social Media**, aiming to add relevant context details to communication, enabling call takers and dispatchers to make fast and effective decisions, to increase emergency response's speed and quality.

Considering specific applications in **transnational collaboration**, **multi-agency** and **cross-border response**, the access to **cloud-based communication and collaboration** will increase incident management consistency and efficiency across multiple independent agencies and response organisations, embracing a careful and controlled data exchange fully compliant with EU **General Data Protection Regulation (GDPR)**.



Avaya's solutions focus on supporting any kind of voice, video, text or social realtime or near-realtime communication.

These upcoming changes and their influences on many levels, will increase the effectiveness of multiple media, both for user-generated as well as for automated communication, and is becoming a key requirement together with most critical applications in Command and Control, Computer Aided Dispatch (CAD) and Geographic Information Systems (GIS).

Avaya's solutions focus on supporting any kind of **voice, video, text or social realtime or near-realtime communication**, with its highly resilient and reliable Avaya Aura™ framework. The situational context provided by all media, offering data about location and circumstances of the communication, is managed by the PSAP application integration layer with Avaya Breeze™. This open and extensible software framework leverages RESTful web services and Java to automate and orchestrate workflows on the communication layer as well as between communication and application layer.

Smarter Cities become Safer Cities

All over the globe **Smart City** initiatives and projects are emerging. A city being considered "Smart" will foster the use of information and communication technologies to drive economic competitiveness, environmental sustainability, and general liveability. One key aspect in this universe will be **Smart Government**, combined with **Smart Living**, where Citizen Safety and Emergency Services will become connected in a multitude of new ways. Examples show the use of video surveillance, enhanced by artificial intelligence, to strengthen security, or the use of sensors and sensor networks detecting pollution, technical outages, or even qualify emergency situations directly. As a result, events or alarms will be generated and communicated through **Emergency Enterprise Service Bus** structures, interconnecting emergency response organisations, civil protection and other stakeholders to allow a joint and coordinated management and response to specific situations.

New requirements for workflows and front-ends

Considering that new media and new types of interactions are coming, PSAP operational staff, call takers and dispatchers will see the need to change their operations or amend existing procedures accordingly, to manage an eCall or to respond to an **Internet of Things**—originated or automated communication. Therefore it will be increasingly important to optimize the user interface and enable the selection of the most appropriate device (PC, IP hardphone, softphone, smartphone, tablet or Avaya Vantage™ new generation devices).

In addition to workflow management and orchestration, Avaya Breeze™ Client SDK enables the creation of **purpose-built user frontends** on the device of choice, handling realtime communications, as well as seamlessly integrating these functions and capabilities into open third-party command & control PSAP applications. These clients can be both Apps based on Apple iOS or Google Android smart devices, or fully Browser-based clients, leveraging **WebRTC** on both sides, caller and call taker. Optimal client choice and design to match operational requirements aims for the best possible user experience without distracting PSAP staff from its core business of managing incidents and emergency situations.



Outside of public safety and surveillance in more industrial fields there are tangible use cases for drones like remote inspection and maintenance.

With **Avaya Aura™**, **Avaya Breeze™**, and **Avaya Breeze Client SDK™**, Emergency Response Organisations are empowered to introduce Next Generation Emergency Communication into their operation environment, and at the same time to get prepared and ready to move to standards-based **Next Generation 112** once this service will be fully supported by international standards and major Service Providers to allow an end-to-end digitally transformed emergency services chain.

Drones in Emergency Situations

The use of Unmanned Aerial Vehicles (UAV) – or more popular speaking “drones” – as an application inside the Internet of Things (IoT) has become very popular over the past few years. The potential benefits for scenarios in public safety, search and rescue as well as emergency services is undeniable. But also outside of public safety and surveillance in more industrial fields there are tangible use cases for drones like remote inspection and maintenance.

Looking at drones, we see them as a geographically very agile communication endpoint in an secured enterprise communication and collaboration environment that add capabilities for interaction and allow a more intensified approach to dynamic team engagement:

- **Delivering real time video footage**

Drones are equipped with sophisticated optical and thermal cameras. In typical scenarios where drones are dispatched, their video feed ends at the remote control of the video and flight operator at the incident scene.

In case the video has to be received and viewed at remote destinations, limitations are usually bound to the delivery time (offline data transport, file upload), lack of immediate interaction between remote staff and drone operators (“Can you fly a bit more north, please?”), as well as security aspects (near-real time feed to public internet streaming services).

**Avaya
OneCloud
solutions
for Unified
Communications
as a Service
(UCaaS) and
Contact Center
as a Service
(CCaaS),
provides
enterprise
organizations
with a fast,
convenient and
automated path
to the benefits
of cloud
communications.**

With Avaya Aura™ and Avaya Equinox Conferencing™ solutions, these restrictions can be overcome by adding a drone as a participant to a secured video conferencing and collaboration environment, allowing the presentation of the drone's video feed to any participant anywhere, as well as a communication between remote spectators and drone operators to support more active and direct influence on the drone's mission execution.

- **Supporting interaction**

One element of interaction is the communication between onsite drone operating staff and remote participants inside a conferencing and collaboration environment, where the drone itself simply delivers a video feed into the video conference.

A completely different approach is to change the drone's role to become more active and support bi-directional communication with voice and video. Hooking a drone to a 4G/5G mobile network, deploying communication software created specifically for the drone, and leveraging manufacturer's onboard or payload API's will allow the creation of new communication scenarios.

Imagine a drone flying to citizens in distress, dropping a Bluetooth-connected defibrillator with a hands-free communication capability, resolving the critical medical situation, being guided by a paramedic using the drone as a voice communication hub and seeing the drone's video captured in that moment.

- **Flying autonomously**

Connecting a drone to a 4G/5G mobile network is the first step to support autonomous flight. Imagine the above mentioned communication scenario being embedded into an end-to-end emergency response process, starting with an emergency call being geo-located and delivering the target destination and waypoints for the drone's mission, and then being continuously monitored and guided by a centralized drone control centre.

Avaya allows to create innovative drone services or to enhance existing drone management platforms, leveraging the open interfaces and APIs of the Avaya Aura™ platform, Avaya Breeze™ and Avaya Equinox Conferencing™ for real time collaboration and advanced team engagement.

Cloud at Avaya

We take a flexible cloud approach and believe all organizations, including large enterprises as well as public organisations, will have a mix of how they leverage different deployment options to run and operate their applications. We support all the different cloud models and mixes to enable organizations to select their best fit.

Avaya OneCloud solutions for Unified Communications as a Service (UCaaS) and Contact Center as a Service (CCaaS), provides enterprise organizations with a fast, convenient and automated path to the benefits of cloud communications. And Avaya OneCloud ReadyNow private cloud offerings feature preconfigured, per-seat consumption and standard bundles of both UCaaS and CCaaS solutions, reducing risk, cost and complexity from the transition to a cloud platform from on-premise solutions.



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With over 3.5 million cloud seats and growing, Avaya brings experience with the full spectrum of business communications in the cloud, leveraging its leading Software as a Service (SaaS) capabilities. Avaya OneCloud private solutions are customizable, with experts to help design, customize and manage applications that meet unique and often complex digital transformation needs.

Many enterprise CIO are interested in the benefits of a public cloud offering, such as an opex-based consumption model, flexibility and speed of deployment. Control and security concerns, along with more limited manageability and customization options from upstart cloud CCaaS and UCaaS vendors, however, have slowed adoption for the larger implementations. Avaya is taking a flexible hybrid approach to the cloud with these Avaya OneCloud solutions to meet the needs of small businesses up to the largest global implementations.

Communications Solutions

Our communications solutions include contact center and unified communications solutions and real-time collaboration software and hardware products, all of which target small, medium, very large enterprise businesses as well as public organizations and can be delivered through a hybrid cloud environment. Our omnichannel contact center applications offer highly reliable, scalable communications-centric solutions including voice, email, chat, social media, video, performance management and ease of third party integration that can improve customer/citizen service and help companies/organizations to be more effective.

Our unified communications solutions help companies and organizations increase employee productivity, improve customer/citizen service and reduce costs by integrating multiple forms of communications, including telephony, e-mail, instant messaging and video. Avaya embeds communications directly into the applications, browsers and devices employees use every day to create a single, powerful gateway for voice, video, messaging, conferencing and collaboration. We free people from their desktop and give them a more natural and efficient way to connect, communicate and share—when, where and how they want.

Avaya also has an open, extensible development platform, which allows customers and third parties to adapt our technology by creating custom applications and automated workflows for their unique needs and allows them to integrate Avaya's capabilities into their existing infrastructure and business applications.

About Avaya

Businesses are built on the experiences they provide and every day millions of those experiences are built by Avaya (NYSE:AVYA). For over one hundred years, we've enabled organizations around the globe to win—by creating intelligent communications experiences for customers and employees. Avaya builds open, converged and innovative solutions to enhance and simplify communications and collaboration—in the cloud, on premise, or a hybrid of both. To grow your business, we're committed to innovation, partnership, and a relentless focus on what's next. We're the technology company you trust to help you deliver Experiences that Matter. Visit us at www.avaya.com.

