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safeguarding
your citizens and assets
with emergency management

introduction

Public agencies, like the emergency medical services, police, fire, and rescue departments, must respond quickly and efficiently in all crisis situations. A modern public safety answering point (PSAP) helps save lives and protect the environment while limiting damages, and can save millions every year.

The following whitepaper looks at how emergency management can support and enhance the emergency services response time when it's truly required.

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The detail of our full-spectrum approach to global emergency management—GEMMA™.

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Atos has extensive experience in setting up public safety answering points. Here you will find a summary of our work.

command and control solutions

Supporting complex, mission-critical processes for public intervention and emergency services requires clear, multi-party management. Only this way can the balance of response time and service quality be properly met.

In Public Safety Response Centers it is vital that the response to emergency calls direct to the Center and alarms received via subsystems is rapid, without any impact on the quality of service.

Command and control solutions help achieve this by effectively integrating and co-coordinating several emergency response units. Often this involves interfacing with a range of complex and often proprietary information systems and data sources to provide important shared intelligence, such as geographical visualization of activity in the crisis area. KPIs and continuous business tracking make sure the correct levels of knowledge-share are met at all times.

This ensures all units have situational awareness in large and complex infrastructures and can make the most appropriate decisions as a result.

It is critical that the command and control solution can support multiple sites and multi-vendor subsystems (sometimes numbering several hundred). But it is also important to control the flow of information to avoid unnecessary overload, although all records must be kept for post-event forensic analysis.

critical availability, total involvement

All public safety answering points (PSAPs) should be able to locate and filter incoming requests, regardless of their origin (phone calls, SMS, alarms and sensors), then classify and forward them to the appropriate emergency response organization.

Dispatchers must, with the support of standard operating procedures, be capable of allocating the closest and most suitable

resource to respond to the emergency situation, and to escalate if the event should require so. This also requires interoperability with and co-ordination of multiple stakeholders, including first responders and other emergency response organizations (EROs).

An emergency management (EMM) platform must be able to cater for the entire service chain and at all levels of activity (see Figure 1). A web-based environment offers the best flexibility to adapt to any given process or role required for emergency operations.



Fig. 1: EMM service chain at different levels

the EMM service chain

The EMM service chain traditionally includes the following stakeholders:

- People in distress—requesting help for themselves or others
- PSAPs (level 1)—responsible for receiving and filtering calls, classifying and locating the incident, providing information to the caller, and transferring calls to the right agency or agencies
- PSAPs (level 2)—focused mainly on agency-specific dispatching, following up all incidents related to a certain location and type, dispatching resources from the right ERO, and escalating incidents to disaster management agencies when appropriate
- Emergency response agencies—responsible for service provision, managing staff and vehicles, maintaining permanent communication (status, messaging) with the resources, co-coordinating PSAPs, and of course service reporting
- City or regional management and authorities—must be kept informed of all relevant information about high priority incidents and the overall situation
- General public and media—where relevant, must be kept informed of situations from the emergency services through public warning mechanisms.

changes in EMM technology

Emergency management can no longer be limited to voice-centric systems for call taking or for resource dispatching. Although phone calls from mobile and land lines still make up the majority of emergency calls, there are an increasing number of situations and channels in which voice is not an option or appropriate.

Figure 2 depicts some of the technologies now involved in different stages of EMM.

Therefore any state-of-the-art EMM system should meet common market and industry standards, providing:

- Full communication system integration—such as wired and wireless telephony, radio, text-based communication—for incoming and outgoing communications, including new channels of communication based on visual components and social media
- Geographic information systems (GIS)—including location and positioning solutions such as call and asset location, vehicle positioning and tracking, possibility of adding multiple layers of information from different sources, including 3D views, CCTV, traffic, and weather information

- Solutions for all operational phases—from call acceptance, resource dispatching, and event management to case completion and evaluation
- Reporting and analysis—support for reports, statistics and operations analysis, including management dashboards
- Planning tools—for staff, vehicles, bases, and overall equipment needed by emergency response organizations
- Highest guaranteed security standards—backup, business continuity (BCP), and disaster recovery (DRP) planning

The next-generation PSAP must offer a global safety and security model that considers each and every channel and stakeholder involved in any emergency management activity. It must also reduce call processing and intervention times, as well as increasing the accuracy of crisis location and better managing triage and resource dispatching.

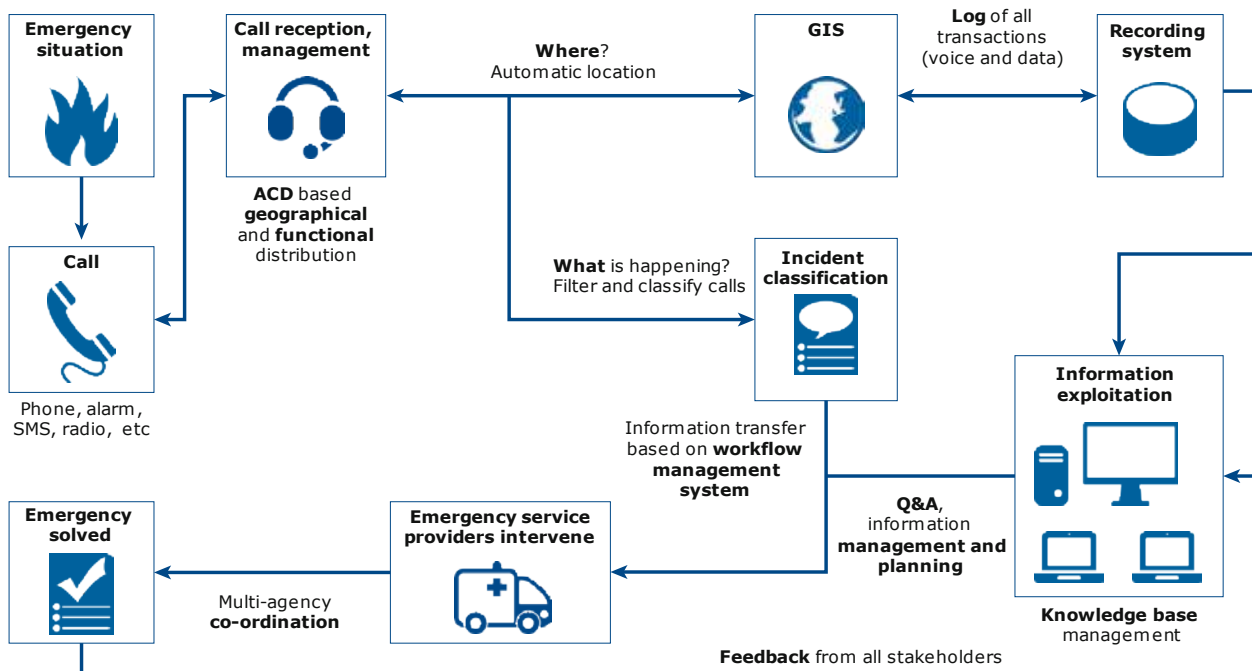


Fig. 2: the range of technologies now involved in EMM

new communication channels and standards

Citizens are demanding more and more from authorities in terms of public safety and security. There is a case for widening the use of communication channels—making the most of the latest technology to better serve the community.

The use of ICT is now deeply rooted in everyday life. The public expects technology to be used for a range of services, including emergency response. This is especially true in the context of major cultural and sporting events, or even natural disasters, terror attacks, and other catastrophes—effective early warning systems are crucial. They can also follow public service activities more closely than ever before, thanks to social media and 24-hour news channels. And there is a lot of technology for public bodies to consider.

technology for emergency and crisis management

From national security through to electronic information management, there are a range of people and skills involved in the foundations of Public Services. The active involvement of citizens in emergency and crisis management, either as volunteers or as qualified informers, is now a viable strategy with the right back-office support.

This is why the next-generation emergency centers must provide the public with real-time information—through wireless networks, mobile applications, and social media. Such technologies offer a bi-directional channel of communication, allowing knowledge-share, and engaging citizen service at the same time.

The result is dynamic, real-time incident information collected from onsite human responders about the extent of damage, the evolution of the event, the community's needs, and responders' ability to deal with the situation. When this is combined with information from the larger emergency management community, a more accurate awareness of the situation is possible. This would enable informed decisions, better resource allocation and thus a better response and outcome to the total crisis.

new and old technology

A recent study by the American Red Cross* focused on the use of social networks in emergency and disaster situations revealed that social media, smartphones, and tablets are key for raising public awareness and readiness for emergency and crisis situations, both locally and internationally. Social media is also used to check on the whereabouts and well-being of friends and relatives. Apps and social media are already the fourth most popular source of information during catastrophes or disasters, behind traditional channels such as TV, radio, or the Internet.

During recent natural disasters in Haiti and Japan, social media was a key channel for information or support in response and recovery—especially when telephone lines were disrupted. Nevertheless, experts do stress the importance of calling emergency services

rather than posting a request for assistance on a social network. But emergency services are beginning to monitor social networks as a preventative measure—for example, to prepare for a mass gathering arranged on Facebook.

a digital strategy

Public administration, at different levels, is already using social media to educate and inform, provide warning and advice in crisis situations. But social media must be a part of a digital strategy to counter rumors, non-verified information, and hoaxes, as well as get feedback from the public—as can be seen in Spain, where Facebook is used by Madrid emergency medical services and Twitter is used by virtually all regional PSAPs and police forces (see Figure 3).

*Social Media in Disasters and Emergencies, American Redcross, July 10, 2012 <http://bit.ly/LSwsSr>



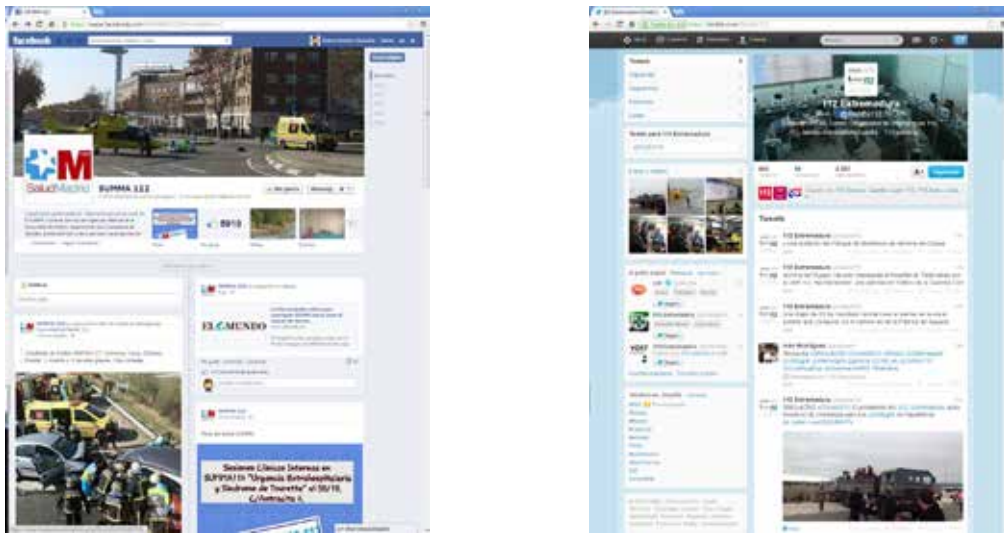


Fig. 3: Spanish emergency services on social media

emergency apps

With more than 50% of adults using smartphones and tablets, mobile apps are now a big consideration for emergency management. These can be categorized in three groups: accessibility (Total Conversation, Real-Time-Text or eSMS), position location (such as medical or disaster guidance), and public warning and witnessing (crowd sourcing).

Mobile apps for emergencies open up a wide range of opportunities, such as providing additional location information through GPS-enabled devices, still pictures and videos, or setting up interactive emergency communications and even supporting crowd management.

Consider an app for crowd sourcing (as used by the Dutch Emergency Services). Just by pressing a button on a smartphone, emergency services and nearby individuals

who are capable of providing immediate assistance are alerted. Similarly, emergency apps can work for the deaf or hard-of-hearing, who cannot use traditional telephone communication to interact with emergency services. Text-based communication through SMS or fax should be a first step towards full accessibility, but not the final target, as communication is delayed, often by several minutes, which in emergency situations can be the difference between life and death.

the wider conversation

Emergency services should aim at real-time communications such as Total Conversation (a de-facto standard that combines simultaneous video, voice, and real-time text), with the support of video-relay centers with sign-language interpreters if needed. We must not forget that emergency services accessibility is included in the European Commission 2009/136/EU Directive (Universal Service

Directive). Between 2009 and 2012, five TC pilots were carried out in Europe within the REACH112 project, involving emergency services, relay services, and deaf associations. Atos participated in this EU R&D Project and performed the Spanish trial with great success.

Another trend in recent years is the need for implementing measures for ensuring rapid and automated communication with emergency services, such as in the event of a traffic accident. There are now mechanisms in place, such as eCall, that provide accurate and usable location information, information about the number of passengers in the vehicle, and details about the vehicle itself that may be relevant for emergency services. This is in addition to setting up a voice communication channel with the most appropriate emergency service.

European legislation has established that all new vehicles produced after 2015 must be eCall-ready. Several eCall pilots are being carried out in Europe through the HeERO and HeERO2 projects, involving emergency services, traffic directorates, and car manufacturers.

public warnings and preventative tools

The more traditional public warning capabilities based on television, radio, or even siren systems are being enhanced by mass-delivered SMS messages, IVR-based solutions capable of delivering voice messages, cell broadcast solutions that push messages to all mobile devices in a certain area, or technologies that send out messages simultaneously to billboards, mobile phones, the Internet, and social media.

The challenge of managing emergency situations, both in ordinary and extraordinary situations, can be eased with predictive and simulation tools that establish active policies for prevention and early warning. This new scenario of multi-channel communications, together with evolving standards for service provision, will be key to emergency management in smart cities and regions in the coming years.



global emergency management and Atos—introducing GEMMA™

A full-spectrum service approach designed to respond to constant changes in ministries, emergency response organizations, border managers, intelligence chiefs, and other security managers.

GEMMA™, a scalable, modular, and interoperable global emergency management solution, has been developed from over 20 years of experience in implementing emergency management and co-ordination projects across Europe. To support our operations, we have established an Emergency Management Center of Competence in Madrid, Spain. Atos is also a member of the European Emergency Number Association Advisory Board and the TETRA + Critical Communications Association.

The GEMMA™ solution addresses new requirements and best practices for emergency handling and supporting new means of communication between citizens, public safety answering points, emergency agencies, and first responders (Figure 4). This enables PSAPs to assume new frontiers.

The main challenges supported by GEMMA™ are linked with the operation, competence level, and integration of different systems and agencies. One of the main benefits is the improvement in public perception of emergency services delivery.

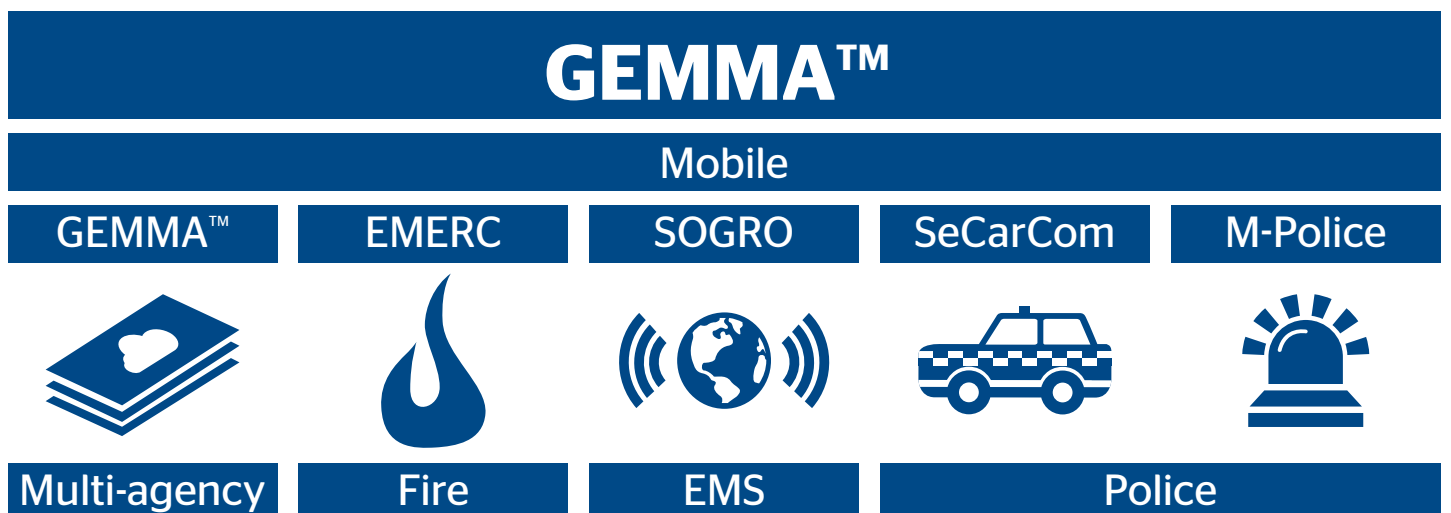


Fig. 4: Command and Control Centers (PSAPs)

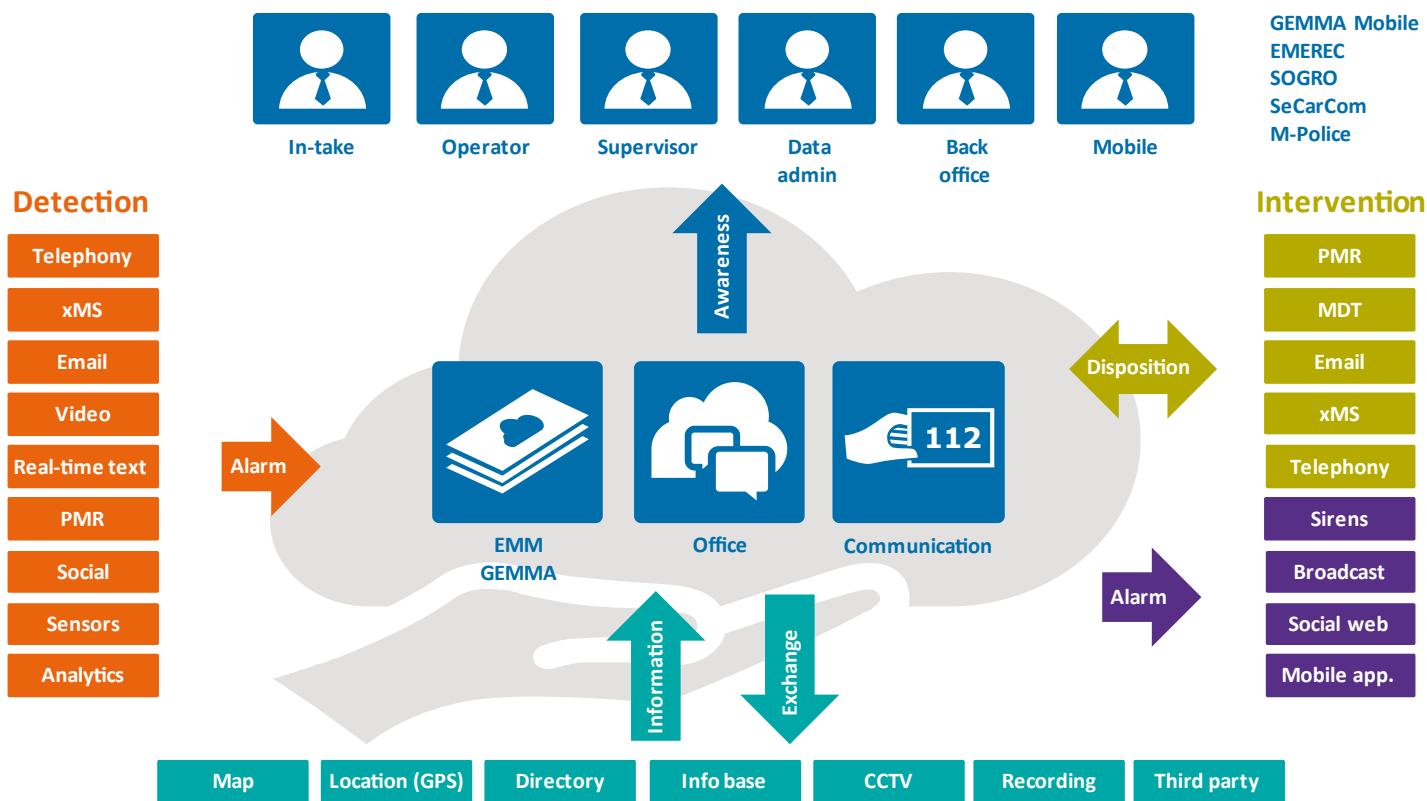


Fig. 5: start-to-finish emergency management with GEMMA™

The GEMMA™ solution handles every emergency from beginning to end:

- Information collection—including answering the call or alarm, gathering incident insight to classify the location of the emergency and its direct resolution, or transferring the call/alarm to other decision-making entities
- Resource identification—activating standard operating procedures (SOP) with automatic resource and action proposals, to identify necessary and available resources and actions to perform, follow-up and monitoring of service delivery, including functions that concern the communication, mobilization, support, follow-up, and co-ordination of the different teams, groups, and operative units dispatched for an incident
- Regulation, supervision and direction—for decision-making not defined in the action plans stored in the system, and administration of all information
- Event escalation—management of information, reporting, and data exploitation
- Maintenance and integrated administration—of system data, for performing maintenance functions on basic system data and parameterized data

The system itself includes functionalities, such as:

- Telephony integration—with automatic call distribution, automatic number identification, and automatic location identification
- Communication with first responders—through telephony (GSM) or radio networks (TETRA, Tetrapol, P25, DMR, etc.), and devices

- Event logging—all voice communications, data, and possibility of playback or audit
- First response management—from panic buttons, automatic fire or intrusion alarms
- Accessibility—for people with hearing or speech disabilities via SMS, Chat, Real-Time-Text, and Total Conversation
- Geographical information—including location of calls from land lines and mobile devices with the information provided by telecom operators and automatic location of vehicles with information received from GPS/AVL systems
- Public warning messages—based on specific emergency planning and through sound (sirens), voice (pre-recorded messages), and text (SMS, fax, email)
- Reporting—management dashboards
- Integration—with third-party databases and systems, including legacy systems

Key technical features of GEMMA™

- Multi-language
- Service-oriented architecture
- Relational Database Management System (RDMS)
- Geographical Information System (GIS)
- Data exploitation
- Multi-platform (independence from the operating system)
- Modularity, scalability and easy adaptation to changes
- Easy installation and parameterization
- Total integration of applications and modules, including third-party applications
- Support for virtualization



GEMMA™ integrates communications regarding incidents and emergencies, using two-, three-, or four-layer architecture options (data, application/presentation, and business logic). It provides a high performance, robust, reliable, and scalable computer aided dispatch and integration solution, with up to 9999% system availability, no single points of failure, fault tolerance, and redundancy in all critical systems. There is also a complete level of integration between the dispatching and communications services, as well as the auxiliary systems. Interoperability is vital for safety and efficiency. GEMMA™ complies with this in terms of technology used (communication systems, databases from different sources, including standard applications) and in terms of agencies involved (data gateways between different platforms, unique incident coding, shared protocols).

The system is designed in such a way that it allows the quick extension of services and functionalities without compromising overall system functionality. Any modifications made, at a hardware or software level, will not rely on technologies that cause a supply dependency. In this way, the solution allows for a quick re-adaptation of procedures in the light of new requirements.

The software architecture fully supports the Service-Oriented Architecture (SOA) concept. This allows for state-of-the-art combination of internal services and interfaces towards other applications. SOA defines how to integrate widely disparate applications using multiple implementation platforms. SOA separates functions into units or services, which are made accessible over a network in order to allow combining and reusing them in other applications. These services and their corresponding consumers communicate with each other by passing data in a well-defined, shared format or by co-coordinating an activity between two or more services. Uniform interfaces utilize Simple Object Access Protocol (SOAP) and Extended Markup Language (XML). GEMMA™ is a modular solution and is operating system independent:

- Data Layer: Emergency and workflow database model independent from the RDBMS. The actual RDBMS used in most reference sites is Oracle, although others are supported, such as Microsoft SQL Server, DB2, or even a combination of systems. The processes that operate the entire system reside in the data server, as well as the database, which is accessed via standard mechanisms for database access



- Data Access Layer (DAL): Object Relational Mapping which includes a DB supported persistence model
- Business Layer: Implementation of the business rules for any object in the solution and communication with the DAL. The internal configuration files are mostly XML files
- Presentation Layer: Integrated interface for the whole solution
- Real-time notification: Responsible for maintaining that every operational workstation keeps being updated. Events are listened to and propagated through the entire system

performance analysis

One of the key features of GEMMA™ is its information management capabilities, including the generation of reports and statistics needed for performance planning of an emergency center in terms of number, zone, and type of incidents that might occur. You can also analyze and evaluate previous activities (such as by response time or procedures used). The analysis and reporting of information is made through management dashboards that can be deployed as mobile apps.

architectural layers to support multi-client application

GEMMA™ can be set up based on a layered architecture. Each of the logical layers can be distributed between one to three physical layers (machines). With virtualization now a must, GEMMA™ can be run within a Cloud Infrastructure Service (CIS) and provides the flexibility that is required to deliver business critical applications and environments (see Figure 6).

To ensure that configuration and operation data are consistent in a multi-client application, a professional and well-supported database is needed. This database must have high availability features, capability to process geographical data, and flexibility to support multiple server operating systems. This is the reason why we have selected Oracle databases for most of our clients.

The modular structure includes:

- Core: the basis of the system that includes all the capacities required for the correct functioning of a PSAP, including call taking, incident management, resource dispatch and follow-up, basic reporting, and data and system administration
- Operational modules: the functionality required for specific domains such as EMS, fire and the police is delivered in special operational modules, but full multi-agency and multi-jurisdiction is supported too
- Functionality modules: additional functionality, such as GIS, AVL, data exploitation, and public warning, that may be used by all or some agencies. Includes administration modules such as base, fleet, HR, and asset management, or mobile clients and even apps
- Communication integration modules: low-level common functions that are used by all of the functional modules such as, data integration, caller support using CTI and radio integration, and VRS integration

There are also other integration modules supporting security and external database and system integration components (such as legacy systems, back-office applications) through an Enterprise Service BUS.

the workflow engine for emergency management

GEMMA™ includes a workflow engine for the emergency management process, with a predefined configuration, but one that is customizable according to client requirements.

GIS

Full GIS functionality is provided, OGC-compliant with WCS/WMS/WFS services, including multilayered maps with specific points of interest, rotational capabilities, and even 3D-GIS capabilities.

Full integration with AVL/GPS provides users with immediate mapping and location services to maximize the utilization and localization of mobile resources.

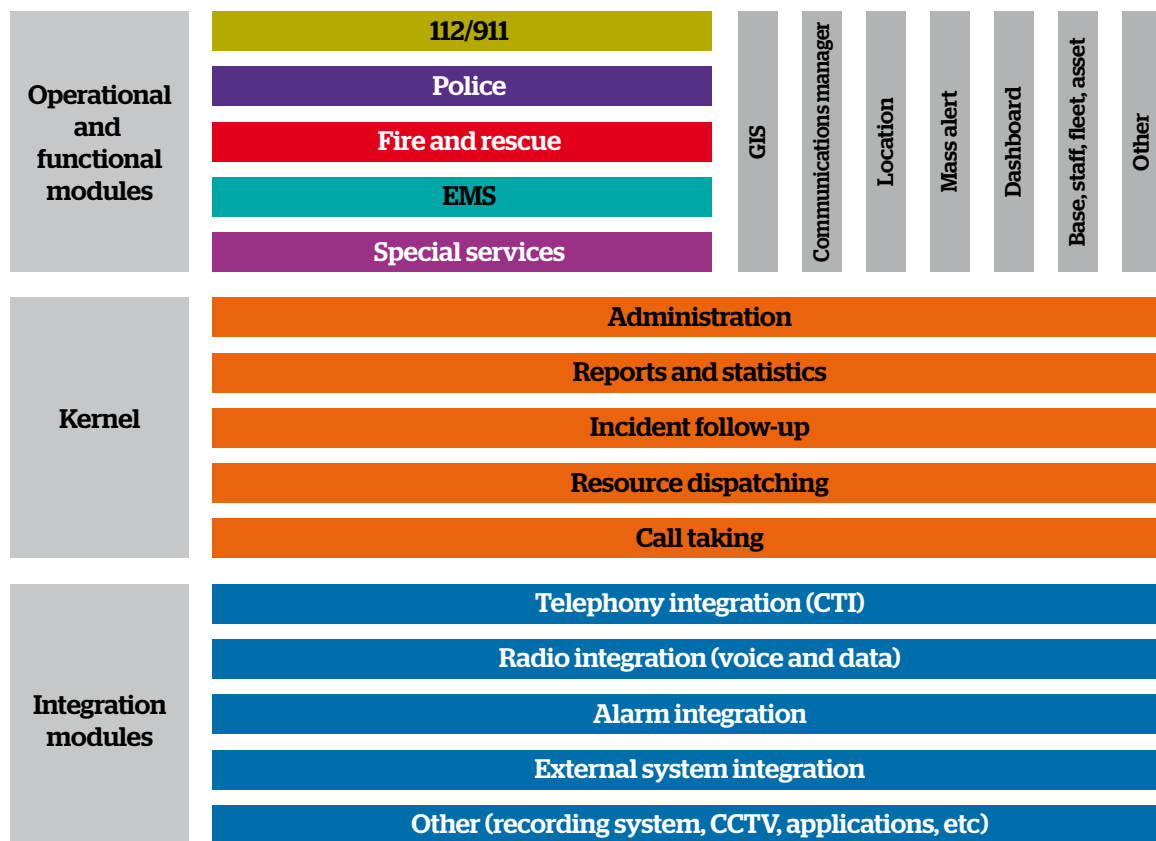


Fig. 6: the architectural layers of GEMMA™

multi-agency platform

There are built-in multi-agency capabilities, in which each integrated agency can have different module configurations. This means that each emergency sector can operate in a different way from the rest of the agencies integrated in the system, with different (but linked) incident ID and/or classification, SOP, location information detail (such as zoning, POI and location aliases).

A dispatcher can also decide to involve additional agencies on top of the SOP. One agency will act as co-coordinator and all agencies can share information (such as resource details and messages). But each agency controls its own information and who can access it (roles and profiles); public information can be accessed by other agencies.

The single incident concept is also used for management and co-ordination purposes. Multi-jurisdiction allows for different operation in different zones for each agency, based on territorial divisions and health coverage areas.

The main requirement for a multi-agency deployment of GEMMA™ is registering each agency in the system, loading agency-specific data (resources, incident classification, protocols, and zoning), defining the correspondence between incident classifications from each agency, and defining private and public information for each agency.

interoperability

The common way of integrating third-party systems with GEMMA™ is through an external integration API, which includes the use of the EDXL-Common Alerting Protocol for emergency message exchange, with an asynchronous approach with an Enterprise Service BUS.

GEMMA™ can receive non-voice calls (such as alarms, SMS, or email), distributed databases (such as subscriber catalogs, operation guides,

and telephone directories), resource/asset location, and also live video feeds, traffic, or weather information to be displayed in the GIS.

mobility

GEMMA™ modules can also be deployed using mobile devices, such as robust MDT for first responders (such as are report functionality for EMS) or tablets/smartphones for management (such as a management dashboard app).



Fig. 7: Location information detail such as zoning, POI and location aliases

ICCS integration

With our integrated common communication system (ICCS), GEMMA™ can integrate Atos voice communication systems that are in use throughout the world in Emergency Centers for Public Safety Authorities and National Safety Command and Control Centers. The voice communication system processes every type of voice connection, be it PSTN, Voice over IP, land line, mobile telephone or professional mobile radio—all in a single system.

ICCS offers clear advantages: comprehensive communication functions, which consolidate call-taking and radio dispatch positions into one standardized and flexible communication console.

The Atos ICCS is the voice communication solution for all sizes of command and control center and other mission-critical environments that demand the very highest levels of flexibility, functionality, and reliability. The system is based on standard technology and is well proven in other market segments.

The Atos ICCS VoIP Voice Communication System is a next-generation control center communication system, which combines proven concepts with future-oriented Voice-over-IP technology. The Atos ICCS is a scalable platform that offers a service-oriented architecture, which ensures consistent features and services across the control center network. Atos ICCS is optimized for public safety and homeland security control centers.

The standard features include:

- Multiple line appearance and access
- Highest degree of reliability
- Unique and consolidated communication
- Modular and scalable architecture
- Tight recording system VRS integration
- Integrated Interactive Voice Response (IVR)
- Supporting open standards (SIP, CSTA, ISDN, compressions)



- Professional mobile radio connection (digital and analog)
- De-centralized system architecture
- Non-blocking system design
- Multiple autonomic calls (radio and/or telephone) at the work position
- Intelligent in- and outbound call routing
- Conferencing
- Support of standard audio equipment
- Touch screen or mouse/keyboard operation
- Role-based
- Free seating
- Open system interfaces for third-party command and control systems (just one link)
- Central system management via SNMP
- Support of virtual control room design

video integration

Other than integrating the video elements of Total Conversation for providing accessibility for deaf and hard-of-hearing, GEMMA™ also provides an interface for independent video management and is based on standard components from the different video system providers (such as Cisco, Huawei, and Siemens).

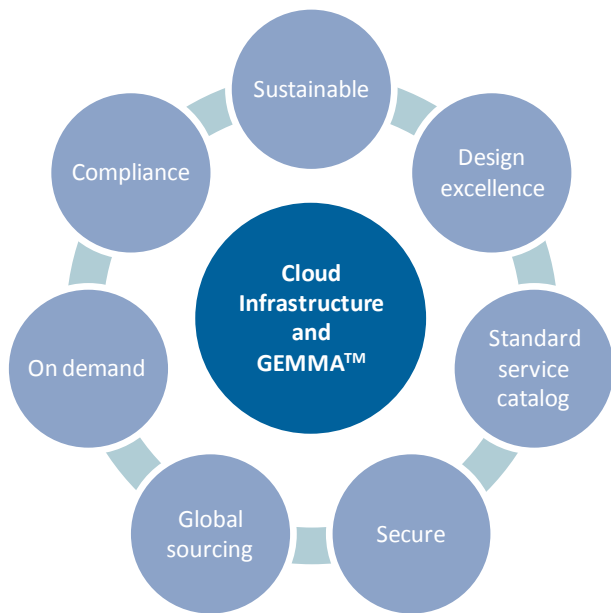
The functionalities available depend on the capabilities of the video system being integrated. The most popular features include viewing real-time feeds for incident management and access to video recordings. The system will present upon request the situation of a video device (even for IR cameras), allowing for monitoring, camera control (such as zoom and camera movements), and video recording. The link between an incident and the recorded video is also stored. Additional intelligent video capabilities relevant for emergency management such as near-real-time video analytics for people or object detection, facial or number plate recognition, or people counting can also be integrated based on third-party systems and tools.

public warning systems

Atos has extensive experience in delivering public warning systems for the public and private sector, including the GEMMA™ module for Emergency Planning for Critical Infrastructures. This module and all its components have a proven track record in locations as diverse as hydro-electric plants or chemical plants.

We provide services and equipment for telecommunications (PMR/Trunking/TETRA radio and telephony), voice recording, communication warning system (for voice, fax, email, and SMS), and sirens for mass notification, to be used for the automatic execution of action protocols (such as warning those likely to be affected in a flood area).





- Cloud Infrastructure Services provides flexible computer processing and storage and backup services to deliver productive environments and business critical application GEMMA™
- Cloud Infrastructure Services are targeted at customers that require:
 - increased flexibility
 - increased agility
 - cost reductions
- Whilst ensuring full compliance to legal and security demands

Fig. 8: GEMMA™ in the Cloud

future-proofing emergency management—the Atos perspective

As members of EENA, we support its advocacy efforts for the improvement of accessibility, the provision of caller location information to emergency services, the adoption of eCall by all member states of the EC, the definition of requirements for systems required and services provided by emergency services, and the definition of the Next Generation 112 specification, among many other things.

One good example of this is our participation in the REACH112 project, in which Atos was the leader of the Spanish pilot (one of five international pilots) and the only emergency management system provider in the consortium. The results of the project have been adopted in our product development.

As a result, the product roadmap for GEMMA™ includes elements such as the development of more mobile apps, the integration of eCall and social media, and also the integration of other Atos-owned systems and solutions such as:

- PMR-gateway
- RFID-based triage
- Early warning system for tsunamis
- Social-media and video monitoring and analytics
- Several solutions for major event management

emergency management and social media

We have recently launched an innovative pilot project called the Social Second Screen, which combines real-time social media data with video for live events such as television programs or major sporting events. The social media activity associated with the event is analyzed and the results are presented to the user in real time. What is especially interesting is that this analysis includes automated highlight selection—highlights are chosen based on what real users are reacting to on social media at that time. The analysis is based on both volume (including geographical information) and sentiment analysis.

emergency management in the Cloud

Our own virtualization and cloud computing technology Canopy™ enables us to offer the GEMMA™ solution as a service (SaaS).

Complex economic and political environments, increasing demand for services and high expectations from the public, combined with technology that may not be best-suited to the organization's business model, unpredicted costs, and early investment but late results, have led to many organizations looking for models that require limited initial investment, provide KPI-based billing and are built on a mature, standards-based platform. We have extensive in-house experience in the SaaS delivery model for software and associated data, with solutions for high-speed transactions and call centers centrally hosted on the cloud, though our own framework (tool-kit).

The scope of GEMMA™ in the Cloud is shown above in Figure 8.

Cloud infrastructure services provide flexible computer processing and storage and backup services for productive environments and business-critical applications, providing increased flexibility, increased agility, and cost reductions, while ensuring full compliance to legal and security demands.

subscribing to GEMMA™

- Perpetual license (one-off) and ongoing support fee
- Subscription fee + monthly or annual fee
- Usage parameters based on KPIs such as number of calls or incidents



references

Atos has over 20 years of experience setting up public emergency co-ordination centers, with multi-agency projects that include police, EMS, fire brigades, rescue, transportation, and utilities with demanding integration of diverse legacy systems. In Spain, half of the country and over 20 million potential users are covered by the GEMMA™ platform. We are also an active member of the Advisory Board of the European Emergency Number Association, with participation in Next Generation 112 and the Operations committees.

The GEMMA™ integrated emergency management solution has been deployed for the following customers, among others:

- 112 PSAPs (call taking):
 - Centro de Atención de Emergencias 112 SOS Aragón (Aragón región, Spain)
- 112 PSAPs (with integrated EMS, FRS and Police):
 - Centro de Atención de Urgencias y Emergencias 112 de la Junta de Extremadura (Extremadura región, Spain)
 - 112–Junta de Castilla La Mancha (Castile-La Mancha región, Spain)
- Emergency medical services PSAPs:
 - SEM S.A.–Sistema d’ Emergències Mèdiques, S.A. (EMS in Catalonia region, Spain)
 - SUMMA 112–Servicio de Urgencia Médica de la Comunidad de Madrid (EMS in Madrid region, Spain)
 - SAAS - Servei Andorrà d’Atenció Sanitària (EMS in Andorra)
- Fire and rescue services PSAPs:
 - Cuerpo de Bomberos de la Comunidad de Madrid (FRS in Madrid region, Spain)
- Critical infrastructures:
 - HC Energía–EDP Group-operated hydro-electric plants in La Barca, La Florida, Valdemurio, Valle II, Tanes and Rioseco dams (Asturias region, Spain)
 - Several dams in different river basins in Spain: nine locations in the Ebro river basin, two in the Duero river basin, four in the Guadalquivir river basin, and one in the Tajo river basin
 - Dixquimic chemical Plant (Catalonia region, Spain)
- Transport:
 - Centro de Coordinación de Emergencias EME30 (Highway Control Center in Madrid region, Spain)
 - Euskotren (railway operator in Basque Country region, Spain)
 - ADIF (Spanish national railway infrastructure manager)

Outside Spain, Atos has delivered emergency management solutions for Italian Carabinieri (Police) and Vigili del Fuoco (FRS), the Swiss private EMS REGA, and the Police of Izmir in Turkey.

About Atos

Atos is an international information technology services company with annual 2011 proforma revenue of EUR 8.5 billion and 74,000 employees in 48 countries. Serving a global client base, it delivers hi-tech transactional services, consulting and technology services, systems integration and managed services. With its deep technology expertise and industry knowledge, it works with clients across the following market sectors: Manufacturing, Retail, Services; Public, Health & Transports; Financial Services; Telecoms, Media & Technology; Energy & Utilities.

Atos is focused on business technology that powers progress and helps organizations to create their firm of the future. It is the Worldwide Information Technology Partner for the Olympic and Paralympic Games and is quoted on the Paris Eurolist Market. Atos operates under the brands Atos, Atos Consulting & Technology Services, Atos Worldline and Atos Worldgrid.

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