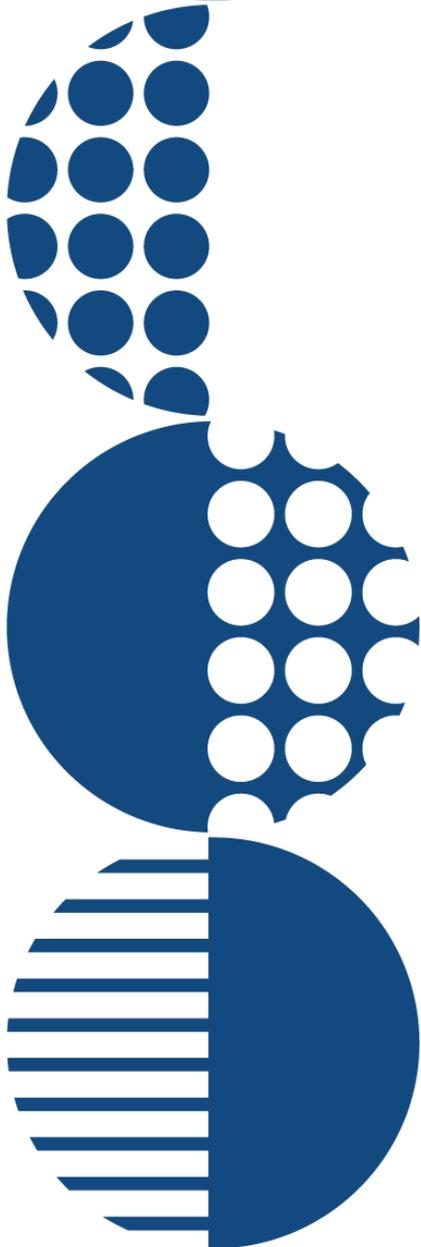




Emergency Incident Response System

Case Study



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Summary

The Vinnitsa EMD Center (VEMC) is a comprehensive emergency service and major public safety agency in the Vinnitsa region of Ukraine. They employ over 1,700 people in the emergency medical care system, which includes 248 doctors, 803 paramedics and many supporting staff. Their ambulance fleet consists of 210 cars which help VEMC service more than 1,460,000 citizens.

Eccentex implemented an Emergency Response Incident Management (ERIM) Solution, leading to a reduction in response time and time-to-treatment by a factor of two. Now, the time of arrival is less than 10 minutes (89.7%) in the city and less than 20 minutes (88.6%) in rural areas. Survival rates for out-of-hospital critical care treatments also increased to 23% (compared with 0.8% before).

In 2017 the agency:

- Processed more than 1,000,000 calls
- Registered up to 420,505 emergency incidents
- Performed up to 270,755 out-of-hospital treatments

Eccentex ERIM provides two major case types: incidents and service requests (transportation, blood delivery and non-emergency care). The solution can be easily configured to implement changes to Case Types, business rules, and forms, which allowed the organization to adjust to new demands quickly.



The solution received the "2018 WfMC Award for Excellence in Business Transformation" by BPM.com and the Workflow Management Coalition.

The award was handed to Eccentex by Keith Swenson, VP of R&D at Fujitsu America.

Tragically, in September 2017 a terrorist organization detonated one of Ukraine's largest ammunition depots. It was the country's second largest stock of artillery storing 82,000 tons of ammunition. Airway and railroad connections in the area were closed. Within 1 hour the Eccentex team implemented a new Case Type from an existing one by changing the rules and procedures to handle this crisis. Incidents and tasks were routed to personnel from other Public Safety Answering Points. The emergency evacuation of 40,000 residents from neighboring villages and towns was successfully performed thanks to the system, including more than 500 people with disabilities and over 30 severely injured persons.

Overview

VEMC is an end-to-end emergency service and major public safety agency in the Vinnitsa region of Ukraine covering 26,513 square kilometers. VEMC provides 24-hour, 365-day-a-year emergency ambulance, coronary and rescue services ready to respond to calls whenever medical emergencies, mass casualty incidents, terrorist attacks, disasters or crises strike. In addition to providing rapid, life-saving responses in the “golden hour” of medical incidents, it is also responsible for providing medical services in people’s own homes or public settings. This includes advice over the phone and even referring patients to other health services. VEMC supports the whole patient journey from the initial call to treatment. The system ensures the best patient outcomes, reduces wasted time, and helps utilize resources efficiently; whether this is achieved with treatment at home or in a hospital.

The emergency medical care system supports 1,763 employees including 248 doctors, 803 paramedics, an ambulance fleet of 210 cars, and services more than 1,460,000 million citizens.

Historical Context

Ambulance services in Ukraine were traditionally a service intended to transport patients from one place to another, usually the nearest hospital. People in Ukraine were encouraged to telephone 103 (Ukraine version of 911) in both medical emergency and non-emergency situations.

Before the project, the Ukraine Emergency Medical Dispatch (EMD) used an outdated system that lacked business continuity, disaster recovery and agility. The region had 18 disparate EMD agencies each covering a different area in the Ukraine, and each of the regions either relied on their own in-house technology solutions or on manual paper-based processes.

The solutions previously in-place at the 18 EMD agencies had the following problems:

- Dispatch systems could not distinguish between emergency and non-emergency incidents.
- Dispatch systems could not distinguish between duplicate calls for the same incident.
- Previously logged calls could be lost.
- No GPS tracking resulted in “lost” ambulances. Without accurate knowledge of vehicle locations and status, the system could not allocate optimum resources.
- It was not possible to tell if the ambulance had been dispatched.
- Frustrated operators resulted in inaccurate information being passed back to dispatch, mistakes in ambulance meant call signs were mixed up, dispatches further delayed, the public repeating their calls and in turn a further increased load on the system.
- The response to emergency calls could be several hours.
- People were waiting over 30 minutes to be answered by emergency services.
- Survival rate for out-of-hospital critical care treatments was very low.
- Field personnel were wasting large amounts of time organizing documents by hand.

What Eccentex Delivered

- VEMC established one emergency operations center that supervised all processes.
- Deployed a real-time command & control (C&C) system to maintain a high quality of service to all citizens built on top of Eccentex's AppBase case management platform for all EMD services in the region.
- The ambulance fleet was equipped with GPS positioning devices and tablet computers.
- Deployed on-premise and in a private cloud to guarantee access.
- Designed for VoIP with SIP routing.
- EU and EENA NG 112 compliant.

Note: The project started in 2013 and went into full production in 2016. The original plan was to go into production in 2014 but a military conflict erupted delaying the project significantly.

Business

The new Eccentex ERIM system was designed to automate end-to-end incident processes, including delivering patients to the nearest appropriate hospital and creating electronic medical records. The implementation began in 2013 and the system has been operational since 2016 with no paper backup systems.

In 2017, Eccentex ERIM provided:

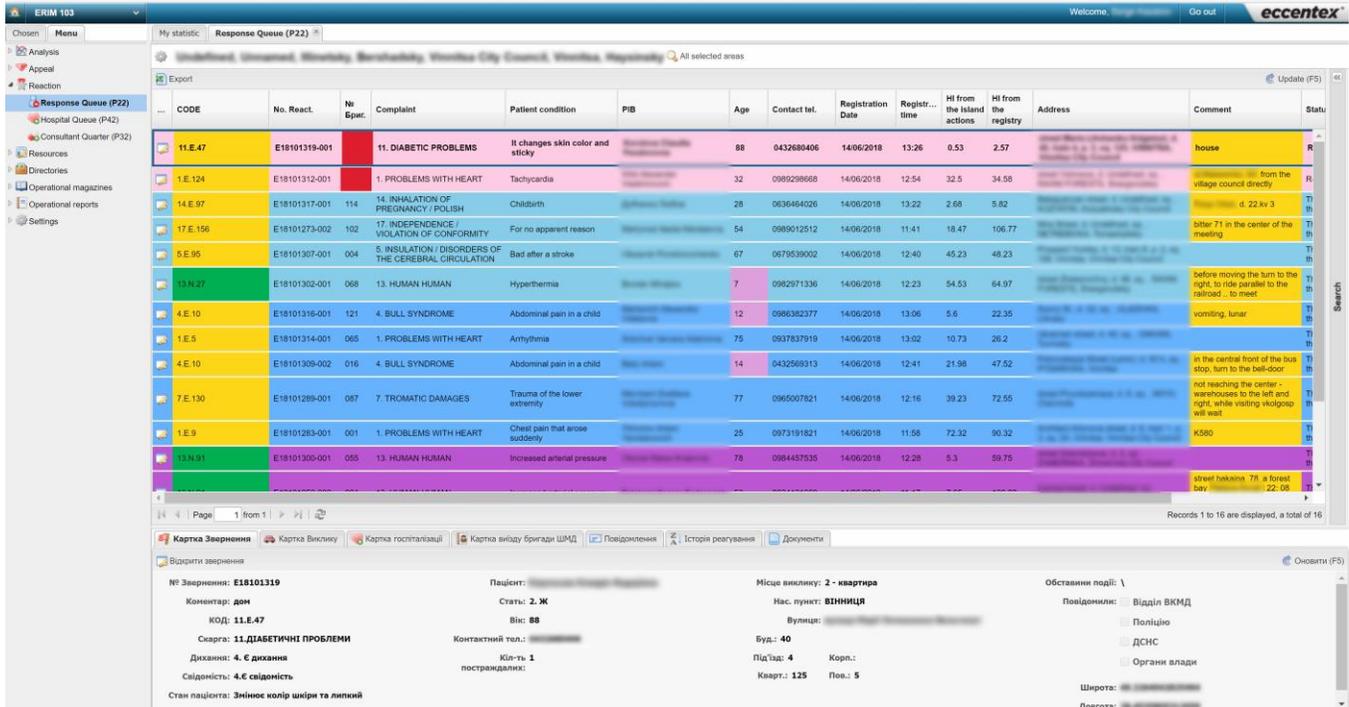
- Integrated call handling and case management
- Standardized emergency medical protocols with clear emergency response checklists
- Dispatchers receive critical information about the location of the incident in real-time
- Helps identify duplicate and non-emergency calls
- Gives ability to dispatch the most appropriate vehicles and personnel faster
- Broadcasts incident information to vehicle and field personnel
- Helps field personnel reach the scene of an emergency quickly
- Allows seamless cooperation on the same incident for multiple teams
- Provides interoperability between emergency services
- Comprehensive view of the information
- Supports the whole process from call intake to hospital
- Provides accurate statistics and KPIs

Case Handling

The solution provides integrated case management, call handling, and helps identify duplicated and non-emergency calls. Two major case types are supported – incidents (emergency) and service requests (non-emergency).

The solution separates allocators and call agents. VEMC agents receive 1 million 103 calls every year and dispatch a response to 420,000 emergency incidents. This level of demand is higher than that of other ambulance services in Ukraine. From the moment of call intake, incidents cases are processed based on configurable emergency protocols through clear emergency response checklists. During the intake process, incidents attended by the VEMC were grouped into three separate categories based on their urgency and life-threat level:

- **Category C** – immediately life-threatening incidents. In 2016/17 around 15% of incidents dispatched by the VEMC were in this category. Dispatchers make the decision to activate protocols on their own including multicausality protocols without prior approval.
- **Category E** – serious but not immediately life-threatening incidents. In 2016/17, around 43% of incidents were in this category
- **Category N** – not serious or immediately life-threatening incidents. In 2016/17, around 42% of incidents were in this category



CODE	No. React.	No. Br.	Complaint	Patient condition	PIB	Age	Contact tel.	Registration Date	Registr... time	HI from the island actions	HI from the registry	Address	Comment	Status
11.E.47	E18101319-001		11. DIABETIC PROBLEMS	It changes skin color and sticky		88	0432680406	14/06/2018	13:26	0.53	2.57		house	R
1.E.124	E18101312-001		1. PROBLEMS WITH HEART	Tachycardia		32	0989296668	14/06/2018	12:54	32.5	34.58		from the village council directly	R
14.E.97	E18101317-001	114	14. INHALATION OF PREGNANCY / POLISH	Childbirth		28	0636484026	14/06/2018	13:22	2.68	5.82		at 22 kv 3	T
17.E.156	E18101273-002	102	17. INDEPENDENCE / VIOLATION OF CONFORMITY	For no apparent reason		54	0989012512	14/06/2018	11:41	18.47	106.77		bitar 71 in the center of the meeting	T
5.E.95	E18101307-001	004	5. INSULATION / DISORDERS OF THE CEREBRAL CIRCULATION	Bad after a stroke		67	0678539002	14/06/2018	12:40	45.23	48.23			T
13.N.97	E18101302-001	068	13. HUMAN HUMAN	Hyperthermia		7	0982971336	14/06/2018	12:23	54.53	64.97		before moving the turn to the right to ride parallel to the railroad, to meet	T
4.E.10	E18101316-001	121	4. BULL SYNDROME	Abdominal pain in a child		12	0986382377	14/06/2018	13:06	5.6	22.35		vomiting, lunar	T
1.E.5	E18101314-001	065	1. PROBLEMS WITH HEART	Arrhythmia		75	0937837919	14/06/2018	13:02	10.73	26.2			T
4.E.10	E18101309-002	016	4. BULL SYNDROME	Abdominal pain in a child		14	0432569313	14/06/2018	12:41	21.98	47.52		in the central front of the bus stop, turn to the bell-door	T
7.E.130	E18101289-001	087	7. TROMATIC DAMAGES	Trauma of the lower extremity		77	0965007821	14/06/2018	12:16	39.23	72.55		not reaching the center - warehouses to the left and right, while visiting (kolgosp) will wait	T
1.E.9	E18101283-001	001	1. PROBLEMS WITH HEART	Chest pain that arose suddenly		25	0973191821	14/06/2018	11:58	72.32	90.32		K580	T
13.N.91	E18101300-001	055	13. HUMAN HUMAN	Increased arterial pressure		78	0984437535	14/06/2018	12:28	5.3	59.76		street hakina 71, a forest bay	T

Records 1 to 16 are displayed, a total of 16

Карта Завернення | Карта Виклику | Карта госпиталізації | Карта виходу бригади ШМД | Повідомлення | Історія реагування | Документи

Відкрити звернення

№ Звернення: **E18101319** Пацієнт: [ім'я] Місце виклику: **2 - квартира** Обставини події: \

Коментар: **дон** Стать: **2. Ж** Нас. пункт: **ВІННИЦЯ** Півднілки: **Відділ ВКМД**

Код: **11.E.47** Вік: **88** Вулиця: [адреса] Поліцією

Скарга: **11. ДІАБЕТИЧНІ ПРОБЛЕМИ** Контактний тел.: [номер] Буд.: **40** ДСНС

Дихання: **4. Є дихання** Кім-ть: **1** Під'їзд: **4** Корп.: [номер] Органі влади

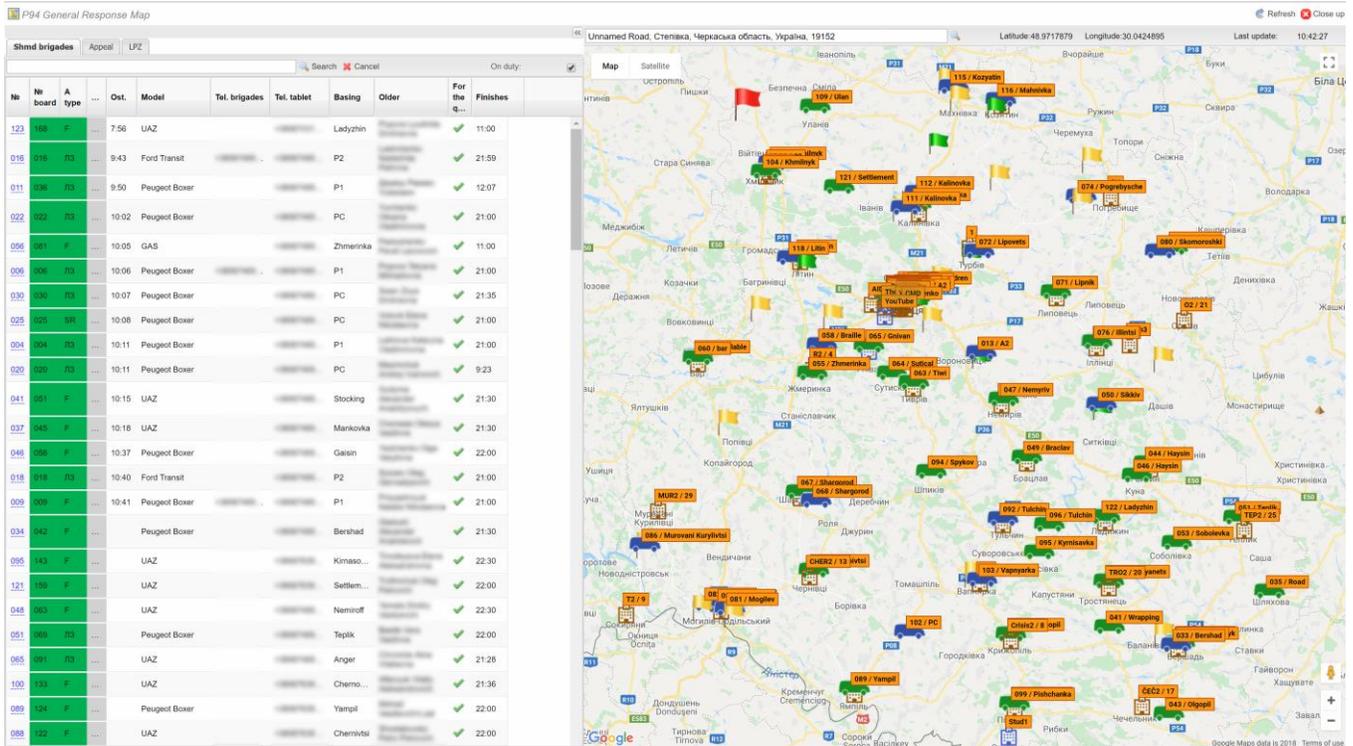
Свідомість: **4.Є свідомість** постраждалих: [кількість] Кварт.: **125** Пов.: **5** Довгота: [координати]

Стан пацієнта: **Змінює колір шкіри та липкий** Широта: [координати]

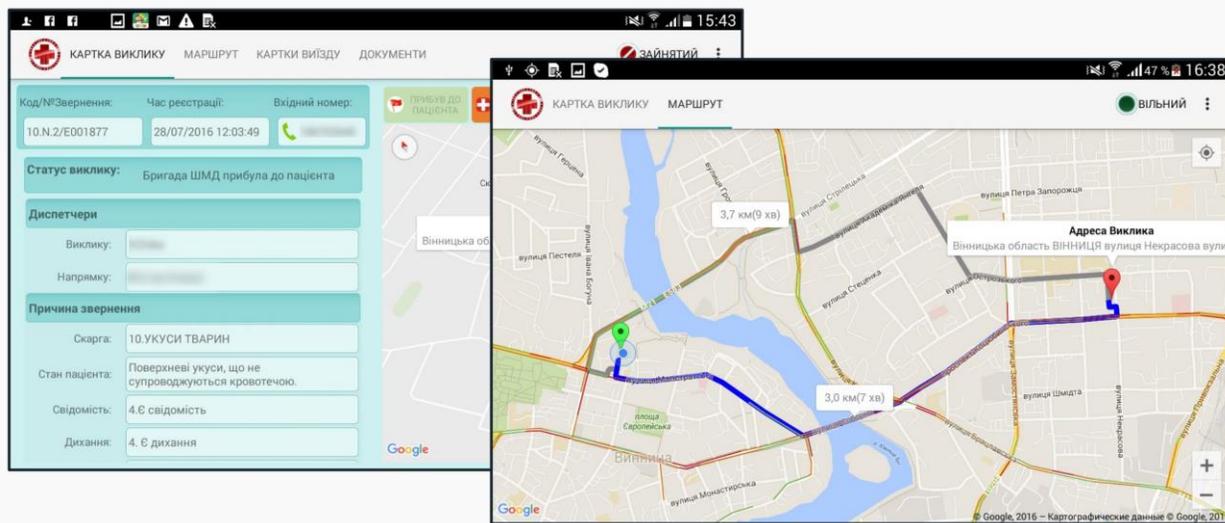
For Category C and E, all ambulance services must meet a national target: respond to the scene of the incident within ten minutes at least 80% of the time.

All incident resolution, processing and handling is digital as a result of every vehicle and center being connected via a cellular network.

Dispatchers could see ambulances racing to respond to calls in their territory, as well as the reported nature of each emergency.



The ambulances send location and status information to the control centers to build a real-time situation awareness picture on an electronic map within the system. The center broadcasts incident information to vehicle and field personnel.



ERIM gives VEMC dispatchers (allocators) flexibility in resource allocation and ability to leverage any available EMS resource when responding to incidents, helping them quickly reach the scene of an emergency.

Benefits

Cost Savings / Time Reductions

- VEMC became more efficient by reducing the number of occasions on which its dispatchers sent too many vehicles to a location. Before, services often dispatch multiple vehicles to an incident to ensure there is a response on scene as quickly as possible.
- Average response time and time-to-treatment after implementation of the new solution has been reduced by 2.5 times.

Operational Agility and Future-proofing

As a nonprofit, VEMC has a high cost of providing software IT solution support which can be prohibitive. VEMC is required by the regional government to reduce operational cost. One of the major project requirements was regarding the design of cost-effective solutions in order to satisfy available budget and allow VEMC to be able to make changes to the software themselves. Changes to VEMC operations needed to be extremely simple so that staff could intervene and correct the system on the fly. It became especially important during the latest terror attacks.

Quality Improvements

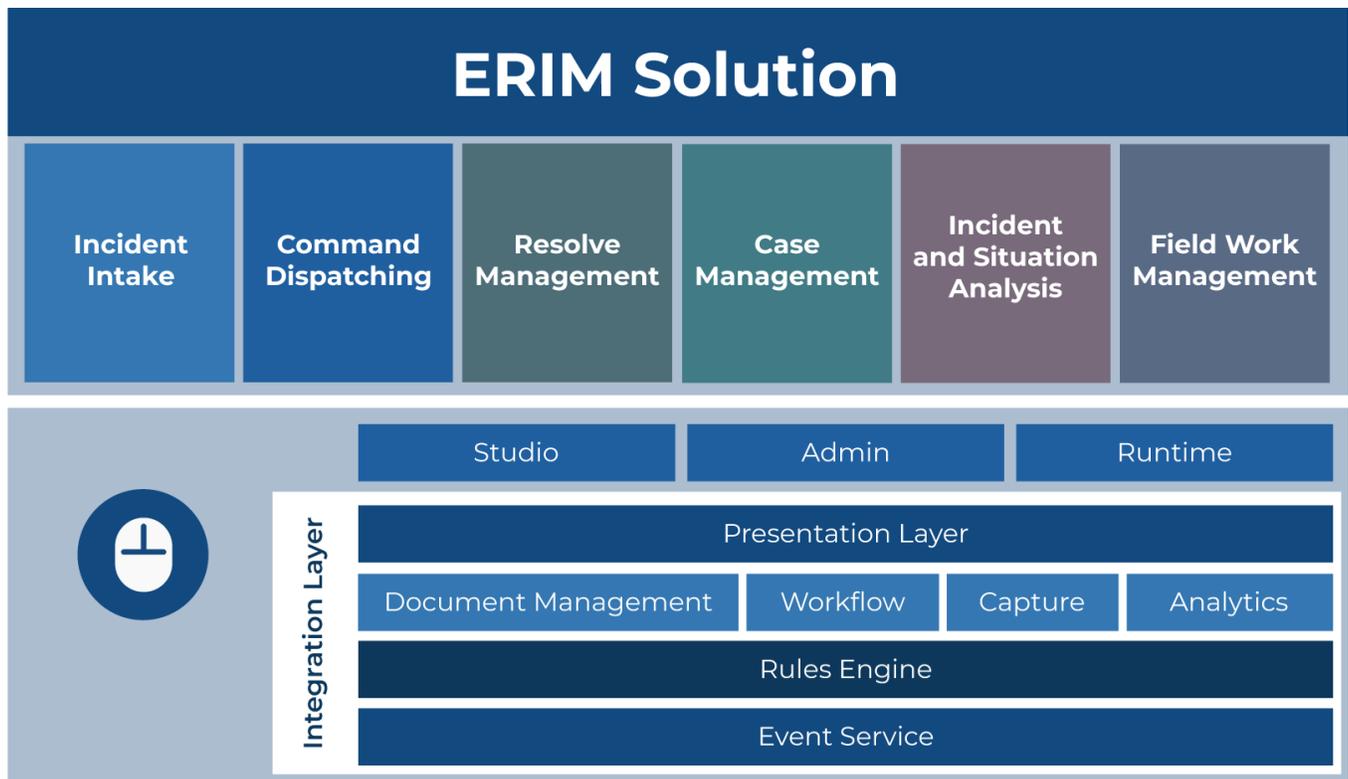
- Calls answered in 5 seconds
 - 95% of the time
- Dispatched within 45 seconds
 - 85% of the time
- Average call handling time 180 seconds
- The time of arrival in the city – no more than 10 minutes - 89.7% of incidents
- Time of arrival in rural areas – no more than 20 minutes - 88.6% of incidents
- Survival rates for out-of-hospital critical care treatments is now more than 23% of incidents
 - Compared to 0.8% before

Long-Term Results

Over the first two years after deployment, VEMC performed better against national response time targets for serious, life-threatening incidents. The VEMC is already ahead of other ambulance services in identifying the patients that are frequent users of its service. The VEMC has put in place an individual ‘frequent caller procedure’, because these patients account for about 3% of all calls to the VEMC.

Technology

Eccentex provided VEMC with a complete turnkey Command & Control solution, providing requirements analysis, system specification & design, applications - design and development, system integration and testing, pilot system in ambulances and call centers, teaching, training and system assimilation, along with region wide deployment.



Eccentex developed ERIM on top of its AppBase Platform and integrated the hardware, communications, and software components for the operational solution. Eccentex also provides VEMC with maintenance and support including a helpdesk and remote login.

AppBase has been designed from the ground up as a dynamic case management platform and includes all necessary functionalities such as Business Process Management (BPM), a key component of the platform.

The BPM module controls case-related workflows. Individual cases may take different paths based on the use of business rules that take case-specific parameters into account.

Furthermore, AppBase is a dynamic case management system. This implies that knowledge workers can change the flow of individual case handling by adding unplanned tasks and procedures to the standard workflow, as may be required.

The platform supports a virtually unlimited number of case types, each of which has its own workflow. Case types may be selected automatically, using a set of business rules based on certain criteria, obtained during case initiation and data capture.

The key to the AppBase platform is the ability to configure and utilize solution and case-specific data objects (database tables that maintain case-related information), workflows, rules and user interface to support these activities.

The platform comes with a powerful integration layer, Business Intelligence (BI) module, comprehensive content management module, Single Sign-On (SSO) and Multi-Factor Authentication.



Eccentex delivers software for mission-critical contact centers and back-office automation. Eccentex's flexible, cloud-architected software – built on its unified AppBase Platform and hosted on Microsoft Azure – empowers people to rapidly deploy, easily extend, and change applications to meet strategic business needs.

Over its history, Eccentex has delivered award-winning capabilities in case management and business process management (BPM) powered by low-code capabilities and advanced document management, to help the world's leading brands and governments achieve breakthrough results.