Technology and Information Systems as the Backbone of the Newly-Established Israel Fire and Rescue Authority

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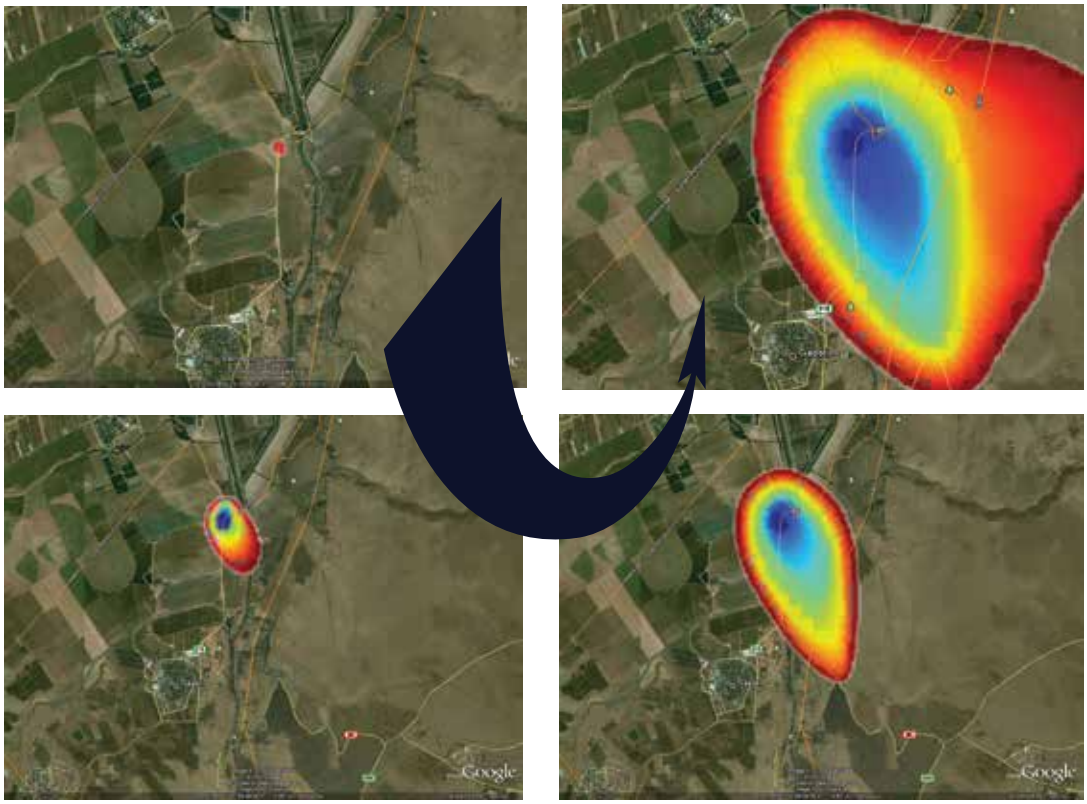
The firefighting services in Israel underwent an extensive reform in which the Israel Fire and Rescue Authority was established in the Ministry of Public Security. Prior to its establishment in early 2013, the fire services operated in a decentralized model, with 24 municipal fire authorities across Israel, operating independently of one another. With the reform, noted as one of the most significant reforms in Israel's recent history, a single, unified authority was established to fight fires and conduct rescue operations.

In implementing the reform, a new organizational structure was built, made up of districts and stations, and a commissioner and various department heads were appointed. The field of hazardous materials was transferred from the Ministry of Environmental Protection to the Fire Authority and special rescue units were established in the Authority. Additionally, new firefighters were recruited, the Fire Prevention Department was expanded, advanced firefighting equipment was purchased along with new fire trucks, and an aerial firefighting unit was established.

The Need for a Technological Infrastructure

In addition to the investment in manpower and equipment, the reform would not have been possible without the construction of an advanced information and technology infrastructure, serving as the foundation and backbone of the Israel Fire and Rescue Authority. Information and technology systems played a major role in making the Authority an effective, advanced organization. However, the development of these systems and their implementation was a complex task, the result of many components and processes, including:



A screen capture from the MATASH Fire Prediction System, developed by the Ministry's Research Department

- The creation of a single organization, with one headquarters and a district-based deployment
- The development of tools and systems to improve command and operational capabilities
- The formation of a technological framework to enable an effective operational response from one of the country's first responders

Creating a Single Organizational Framework

Prior to the establishment of the Israel Fire and Rescue Authority, the municipal fire authorities operated as 24 individual organizations, and lacked unified command capabilities. With the decision to establish a single national authority, the process of constructing a computerized technological infrastructure for the organization began. At the time, the majority of the municipal fire authorities lacked command and control systems, and for even simple tasks like email, free accounts from Google and Yahoo were used.

A multi-stage plan for the acquisition and installment of advanced servers was formulated, with the goal of establishing a nation-wide network for the Fire Authority. In the six months leading up to the establishment of the Authority, a central computerized foundation was established in the National Fire Commission, based on VMware, and a secure, cloud-based communication system was built as well as a backup cloud-based system. Added to this were various information and computer systems that, for the first time, would enable a unified picture of the entire array of firefighting operations on one network, with information being exchanged between all the users.

Among the shared computerized services that are now available:

- A nationwide computer network with unique email accounts for every firefighter
- Shared file storage
- Advanced command and control capabilities
- A new GIS system
- Data protection systems

Later, a computer network was set up, and the lengthy,

One of the recently-purchased, quick response firefighting motorcycles

The Fire Authority's Command and Control Center, located at the Fire Authority headquarters in Rishon Letzion

complex process of connecting it to each of the 110 fire stations and 2,200 users began. The connection to the government's SAP system served as a framework for managing the manpower, acquisitions, logistics, vehicles and budget of the Fire Authority. This SAP system, together with access to the Authority's website, enabled the firefighters to enter their personal information into the system and quickly and easily be admitted into the new Fire Authority as government employees.

The Fire and Rescue Authority established a new website in Hebrew and English, and next year it will be available in Arabic as well. The website offers information about the organization, news, fire-related publications, guidelines for emergency situations and fire prevention tips. In addition to the general information available on the website, there is also professional information regarding fire safety regulations for businesses and buildings, and an area for making payments.

Telephone System

Over the course of last year, the installation of an advanced call center was completed, which will serve in emergency situations and also function as an internal network. Aside from telephone calls, the call system is also capable of operating the gates of the fire stations, operating the loud speaker system at stations and providing statistical data of incoming phone calls in order to make improvements.

It should be noted that the Information Systems Department in the Fire and Rescue Authority and the Ministry of Public Security were praised by the Israel Chamber of Information Analysts for their outstanding work in the establishment of the Fire and Rescue Authority's technological infrastructure.

Improving Command and Control Capabilities

In addition to the organizational needs that were met by the development of the technological infrastructure, the preparedness and professional response capabilities of the Fire and Rescue Authority also benefited greatly.

This past May, the GIS system used for the command and control systems of the Authority was updated, and is now based on the search engine of Google Earth. The system is comprised of a number of modules that are exhibited on a map, including the location of fires and the location of structures for fire inspections. Google Earth provides information quickly, can display areas

and structures in 3D, is easy to use and works well on a variety of devices.

The Fire Prevention Department, which inspects buildings and issues fire safety licenses, was also in need of an updated system. Until recently, the Fire Prevention Department managed its operations on a separate system from the rest of the Authority's operations. The two systems have now been combined and are soon to be operational. The new system is connected to a number of databases and makes extensive use of GIS for managing fire prevention data.

Improving Response Capabilities as a First Responder

The transfer of the fire and rescue services to the Ministry of Public Security improved collaboration with the Israel Police. The Fire Authority districts closely resemble those of the police and the interaction between the commanders and field operators of the two national organizations greatly improved.

The Israel Fire Authority's National Command Center was established in April 2012, following the Mt. Carmel Fire and the State Comptroller's report, which stressed the need to improve command and control capabilities. The center provides a real-time situational picture of what is happening in each district at all times. The development of the system, which cost some NIS 4 million, included connectivity to the police and Home Front Command and all other emergency communication networks, and can also connect to live aerial feeds from the field.

The Ministry's Research Department, together with meteorologists and experts on the spread of forest fires, developed a Fire Prediction System. The system is based on observed meteorological data: temperature, humidity, precipitation, wind direction and speed, and infrastructure data: topographical conditions and locations of flammable materials. The system integrates all the data and produces a two-dimensional and three-dimensional map of potential fires. Additionally, for an existing fire, the system can provide a simulation of the fire's line, where it is likely to spread in the next 24 hours and where there are at-risk areas that should be evacuated.

Another technological leap was the connection of the Fire Authority to the national communication system of Israel's first responders – the Nitzan system. In September 2013 the Israel Fire and Rescue Authority signed an agreement with the Israel Police on the shared use of the Nitzan system, currently used by most of Israel's emergency agencies.

Looking to the Future

At present, the Ministry of Public Security, the Israel Police and the Israel Fire and Rescue Authority are in the process of improving their aerial support by acquiring new helicopters with both policing and firefighting capabilities. The collaboration of the Israel Police's aerial unit in firefighting efforts is a direct result of the Minister's policy, which calls for increased cooperation, synchronization and shared utilization of resources between the Ministry's various operational bodies.

Technology and innovation, together with dedication and broad inter-agency planning, has greatly improved the capabilities of the first responders, especially the Israel Fire and Rescue Authority.

The Israel Fire and Rescue Authority

Our Mission

The Authority is commanded by the Fire and Rescue Commission, headed by a Commissioner, which directs the Authority and coordinates its operations.

The Fire and Rescue Authority works to:

- Extinguish fires, prevent their spread, save lives and salvage property
- Prevent fires through safety precautions and regulations
- Rescue trapped victims
- Deal with hazardous materials events
- Save lives in non-fire situations

Fire Personnel

Total Fire Personnel	2,443
Firefighters	1,806
Fire Prevention & Investigations	208
HAZMAT Personnel	12
Female Personnel	271
Female Firefighters	18

Training

The Israel Fire and Rescue Training School was established in 1979 in Rishon Letzion. The school provides training for all types of firefighting roles, as well as for additional bodies, including prison service personnel, electric company employees and staff from the Nuclear Research Center.

Fire Prevention

Fire prevention is a main focus of the Israel Fire and Rescue Authority.

To this end, the Authority operates in two fields:

- Educating and informing the public about fire safety
- Regulating and overseeing building laws and setting safety codes

Hazardous Materials (HAZMAT)

Ten fire stations throughout the country operate advanced HAZMAT units which are equipped with specialized vehicles for dealing with HAZMAT events and non-conventional terror attacks. Other fire stations are equipped with basic kits for responding to minor HAZMAT situations or for providing an initial response.

Special Rescue Units

There are 24 special rescue units and a national rescue unit in the Fire and Rescue Authority with the ability to conduct rescue operations:

- From great heights
- In flowing water
- In collapsed structures
- In traffic accidents

Aerial Firefighting

The aerial firefighting unit is an operational unit of the Israeli Air Force that aids the Fire & Rescue Authority in quickly extinguishing fires and preventing casualties and damage. The unit was established in May 2011 in light of the Carmel fire, in which aerial support was lacking. The unit consists of eight Air Tractors, located at two air force bases.

Calls to the Fire Authority

	2012	%	2013	%
Fires	50,654	56%	52,024	55%
HAZMAT Events	5,301	6%	4,519	5%
Rescues	14,201	16%	14,484	15%
Other (exercises, false alarms)	19,429	22%	23,893	25%
Total	89,585		94,920	