

Fighting fire with geospatial data intelligence

Dublin Fire Brigade

The Challenge

- Extend capabilities for data-driven operational and strategic decision-making

The Benefits

- More targeted fire prevention activities
- Improved firefighter safety
- Well-informed strategic planning
- Huge potential for the future

Ireland's largest fire and rescue service, **Dublin Fire Brigade**, has embarked on a journey to embed geospatial data intelligence at the heart of operational and strategic decision making. Using Esri's ArcGIS technology, it is already increasing the effectiveness of its community fire prevention activities and developing solutions to improve safety for firefighters and allocate resources more appropriately to address the biggest risks in a changing cityscape.

The Challenge

Dublin Fire Brigade provides fire, rescue and emergency ambulance services, 24 hours a day, 365 days a year, throughout the four Dublin local authority areas. Founded over 160 years ago, it is constantly adapting to improve the services that it provides and recently established a new Organisational Intelligence Unit to drive digital transformation projects.

A key goal of this new unit was to optimise the use of location-based information to deliver insights at both a strategic and operational level. From delivering fire safety campaigns for specific vulnerable groups to notifying firefighters about high-risk buildings, the fire brigade was convinced that it could make better use of geospatial data to help save lives.

The Solution

After completing some initial exploratory exercises using open source geographic information system (GIS) technology, Dublin Fire Brigade decided to implement a full-featured GIS platform using Esri's ArcGIS system. Fire station officers used their operational knowledge to create a proof-of-concept and then appointed consultants from Esri Ireland's Professional Services team to build the solution. "It has been a really successful collaboration," says Rob Howell, Station Officer for the Organisational Intelligence Unit within Dublin Fire Brigade. "The consultants at Esri Ireland have a high level of expertise, both in terms of their GIS knowledge and their project management skills."

Esri Ireland first built a core GIS platform for Dublin Fire Brigade using Esri's web-based ArcGIS Online solution. This foundational system brought together operational data, such as the locations of fire stations and historic fires, and combined it with third-party data, including census and population health information, for the first time. Esri Ireland then began to leverage this platform, and other ArcGIS products, to create specific solutions to help the fire brigade manage and reduce fire risks.

The first of these solutions was developed to improve community fire safety activities. Staff now use ArcGIS Survey123, an easy-to-use, form-based data gathering tool, to capture information about community fire prevention activities, including where they took place, the type of group and the information provided. All this data is transferred seamlessly to ArcGIS Online, where it can be viewed on an interactive dashboard, alongside contextual information showing where there are high numbers of smokers or elderly people, for example. Users can explore the data in the dashboard to easily see where community fire safety activities have been delivered and where they are still needed to reach at-risk communities.

Another solution has been developed to raise internal awareness of buildings in Dublin with fire safety issues, such as inadequate means of escape, building defects or over-occupancy. Staff use an ArcGIS Survey123 form, currently in the pilot phase, to collect information about the building owner, risks and actions required. The data is displayed in an ArcGIS dashboard, giving a map-based overview of these high-risk buildings and the ability to drill down to more information. When new risks are identified, ArcGIS Online automatically instigates email alerts, through the use of ArcGIS Connectors for Power Automate, giving relevant personnel the information they need to gather operational intelligence to inform the response.

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Rob Howell, Station Officer, Organisational Intelligence Unit, Dublin Fire Brigade

The Benefits

More targeted fire prevention activities

Through the use of ArcGIS, Dublin Fire Brigade now has the insight it needs to focus its community activities on the right people, in the most high-risk locations. It can, for example, see clusters of dwelling fires over the last three years and plan educational campaigns for these specific residential areas. “ArcGIS gives us the ability to target our fire prevention strategies within the city,” explains Howell. “We can deliver campaigns in the right locations to reach the most vulnerable people and have the biggest impact in terms of community fire prevention.”

Improved firefighter safety

While the ArcGIS-based Building Risk app is new, Dublin Fire Brigade anticipates that it will improve safety for firefighters by making them more aware of Dublin’s high-risk buildings. They can then put effective response plans in place that take known issues into account. “We have to consider firefighters’ health and safety as well as that of the general public,” asserts Howell. “By being better informed, we can improve our responses to incidents and also keep our responders safe in fires and other emergency situations.”

Well-informed strategic planning

Undoubtedly, ArcGIS is providing Dublin Fire Brigade with the insight it needs to help it make better, faster, data-driven decisions about how to evolve the fire service to meet the needs of Dublin’s residents, businesses, institutions and visitors. It can plan the allocation of resources more effectively by, for example, making plans to ensure aerial fire appliances are based closest to the tallest high-risk buildings and considering the optimal locations for new fire stations, as Dublin expands.

Huge potential for the future

Recognising that the use of ArcGIS is increasing rapidly within Dublin Fire Brigade, the Organisational Intelligence Unit now plans to organise its ArcGIS apps and geospatial data resources in a web portal, built with ArcGIS Experience Builder. This will enable operational staff and senior officers to access the solutions and data they need more quickly and make wider use of GIS for strategic and operational decision-making. “The potential for GIS in the fire service is absolutely huge,” claims Howell. “ArcGIS has a big role to play in our future.”

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