THE IRISH NATIONAL BIODIVERSITY DATA CENTRE

COLLATING AND SHARING KNOWLEDGE ABOUT IRELAND'S DIVERSE NATURAL ENVIRONMENT.

The National Biodiversity Data Centre was set up to collate and disseminate over a million records relating to Ireland's diverse natural world. This was a huge undertaking, but the organisation has achieved its goals – and much more besides – through the use of Geographic Information System (GIS) technology.

The client

Located in County Waterford, the National Biodiversity Data Centre (Data Centre) collates, manages, analyses and disseminates data on Ireland's biological diversity. It plays a key role in facilitating the exchange of data between governmental organisations, non-government organisations, research institutions and volunteers.

The challenge

The Data Centre was founded in 2007 by the Heritage Council of Ireland, with funding from the Department of the Environment, Heritage and Local Government. A management board was selected for the new organisation, and through a tendering process, Compass Informatics was appointed to establish and operate the centre.

The Data Centre's original mission was to collate all available data on biodiversity, in line with national and European legislation. At the time, Ireland's biodiversity data was scattered across the country and much of it was hidden in little known archives, museums and libraries. The centre aimed to bring all of these data sets together and create a single national biological data archive for Ireland.

Soon, however, it became clear to the Data Centre that it needed to embrace a broader mission. "At first, we were only looking at one side of the equation," says Liam Lysaght, director of the Data Centre. "We were focused on collecting data, but we also had to present the data and make it universally accessible to everyone." The centre therefore started to consider ways to not only collate and store data, but also to share it. It wanted to make the country's vast and rich data resources easily accessible to public and private organisations, as well as individuals and groups.

Solution and capability delivered

Compass Informatics proposed and developed a mapping and data management system for the Data Centre. The solution is based on Esri ArcGIS Server technology and provides a central platform for presenting data from over 1.6 million observation points around the country. Users access the mapping and data management system via a web-based portal and can view any data they are interested in, displayed on a digital map of the country.

In addition to the biodiversity data, ArcGIS serves up a wealth of

relevant contextual data, such as information on forestry, land contours, aerial photography, protected areas, geology and water and soil quality. These additional layers of information can be turned on or off, to give users a deeper understanding of the habitats in which different species live. Users can zoom in to view particular areas of the country in detail, view one data set or multiple layers of data and save, send or print map views.

From tracking web site usage, the centre has been able to ascertain that its GIS platform is used most widely by professionals, during the working day. It provides a great deal of information that is of immense value to public bodies involved in implementing European birds and habitats legislation, planning new developments and considering land-use changes, for example. It is also of great interest to professional recorders and academic researchers who use it to help validate and support their own particular conservation and wildlife projects.

The benefits

The development of Data Centre's mapping and data management system has been instrumental to the organisation's success. Within the space of just a couple of years, the organisation has achieved its goal of setting up a single national record centre for biodiversity data in Ireland. "Previously there was no system in place for acquiring data on different aspects of Ireland's biodiversity," Lysaght says. "Much of the data that existed was inaccessible and, in some cases, it wasn't even digital. We have been able to identify strategically important data sets, digitise them and bringing them together to create new national databases."

Most significantly, the use of ArcGIS Server has enabled the National Biodiversity Data Centre to make these incredibly valuable datasets accessible to anyone via the web site www.biodiversityireland.ie. The interactive maps, served up to the site by ArcGIS, are easy to use and provide a complete view of Ireland's biodiversity resources. Currently, users can view information on over 10,000 different species, ranging from fungi to mammals and plants, at the touch of a button.

Because biodiversity data can now be accessed by anyone on a 'self-serve' basis, the Data Centre can work much more cost

effectively. Lysaght explains: "If we didn't have a vehicle for disseminating information, then much of our time would be absorbed by responding to ad hoc data requests and providing hard copy reporting. I estimate that, if we didn't have our GIS platform, as much as 50% of our time could be spent serving up data. The use of GIS creates a huge efficiency for our organisation."

But this isn't all. The use of GIS has delivered another unexpected benefit for the organisation. Because ArcGIS Server presents biodiversity data alongside additional contextual information about the landscape and natural environment, users can analyse and interpret data in ways that really weren't possible before. "What we have delivered with ArcGIS is far more than what we originally planned," says Lysaght enthusiastically. "The level of interpretation that we have been able

Presenting the distribution information against background layers, such as here showing the occurrence of observations on the edge one of Ireland Natura 2000 protected sites, provide great added value to the data.

to bring to Ireland's biodiversity data has far exceeded our expectations."

The Data Centre believes that, in the future, it will be able to play a stronger role in working with government to influence public policy in areas such as regional development and strategic planning. Already, the organisation feels that it has raised awareness of biodiversity in government. "Our use of GIS has really helped to bring natural science in Ireland into the 21st century," believes Lysaght. "Ireland's national government has, for many years, talked about building a 'Knowledge Economy'. With the development of our mapping and data management system, we have demonstrated how the natural sciences can contribute to this Knowledge Economy. We have brought the whole field of natural science more in line with high level government policy."

The future

The Data Centre is on the verge of introducing a significant new release of its mapping and data management system, which will make heavy use of Silverlight technology. This enhanced solution will deliver fully integrated data on marine, as well as terrestrial environments. Given that the landmass of Ireland is actually only one tenth of the entire territorial area of Ireland, having the ability to map the marine area is hugely important to the organisation.

As the operator of the Data Centre, Compass Informatics is now also looking farther afield and hopes to bring the GIS and associated operations to other countries and organisations. This international dimension is already apparent with the Data Centre and its role as a national node in the Global Biodiversity Information Facility.

Once this latest system is up and running, the National Biodiversity Data Centre does not anticipate the need to make any further changes to its ArcGIS-based solution. Lysaght says: "*The system that we have is sufficiently robust and comprehensive that it is more than adequate for us for the foreseeable future. We have created a system here that we think is absolutely state of the art and we are very proud of it.*"

Visit the National Biodiversity Data Centre at www.biodiversityireland.ie. Photo credits National Biodiversity Data Centre, Ireland. Article by Kathryn White, Marketing Consultant and IT Writer.