Ascension Environmental Information Operations Utility

November saw the official launch of Ascension's first integrative geographical information system or GIS – The Ascension Environmental Information Operations Utility (AEIOU). At two public meetings at the Conservation Centre in Georgetown, the system was unveiled to islanders.

Funded by the Overseas Territories Environment Programme (OTEP), the AEIOU project was a collaboration not only between Conservation Department in Ascension Island Government (AIG) and two GIS specialists, Dr Edsel Daniel from Vanderbilt University (USA) and independent consultant Alan Mills, UK, but with a wide range of other agencies on island and elsewhere. Everyone supplied ideas and information, and have been instrumental in ensuring data can be integrated from many backgrounds: conservation, built environment, utilities and jurisdiction.

The overarching purpose was to assimilate geographic information for environmental monitoring, management and planning to meet many obligations within Ascension Island's Environment Charter. It also produced a facility for the general public and students at Two Boats School to be able to use layers of data and incorporate their own information with the maps.



Trainees at the Basic GIS Training course at Two Boats School

Project activities ensured AEIOU is less a project-oriented mapping tool, more an integrative toolbox to be used for multiple purposes by many agencies. They included interventions on data, hardware, software, training, steerage and applications.

A focus was identifying those applications for geographical information required by all stakeholders, including those international bodies working on island. The widely ranging applications were classified into themes including conservation, planning, marine management and policing. Within these were a series of products (for conservation this included turtle, bird, landcrab and endemic plant monitoring) and for each product; specific outputs were listed (e.g. for turtles we wanted to show number of nesting attempts at beaches for a period, or a comparison of total nesting across seasons).

From this list, requisite datasets were identified. Either they already existed on island or were created within the project. Data were widely sourced. A company called Geosense (UK / South Africa) made a series of digital layers showing coastline, contours and roads from the Ascension Island 1:25 000 map and digitised a land parcel map. Two near cloud-free satellite Quickbird images (resolution 63cm) were acquired and used as a detailed background or to extract new information, such as interpreting buildings and Mexican thorn bush.

GPS-located rat bait boxes and feral cat bait traps were mapped, and information from extensive monitoring programmes which Conservation conduct, including cetaceans surveys, bird nesting and colonies, and locating endemic plant species were integrated. RSPB have given extensive support to establishing robust monitoring databases (through Ian Fisher and Sarah Sanders); in AEIOU some small adaptations were made so they could be dynamically mapped. Similarly, Jacqui Ellick and the Turtle Group have years of nesting records and, in collaboration with Annette Broderick from University of Exeter, a new database was designed to record and archive this information. More datasets include a rat-monitoring database for Environmental Health, and bathymetry and navigational data were digitised under license from UK Hydrographic Office in Taunton to ensure marine elements of Ascension's environment have a basemap too. Other scientists working on island gave ideas; eg land crab data from Richard Hartnoll of Liverpool University, and the public contribute by reporting ad hoc sightings of hawksbills, dolphins and whales.

Datasets were collated and catalogued so everyone knows the system's information: its quality, extent and currency. A GIS interface based on Arcview software allows staff to easily get to grips with GIS complexities. As well as being able to load any of the 84 data layers, navigate quickly to different locations and create printed maps, it also allows staff to work with the identified products and interrogate databases to show dynamic monitoring information for any period selected. Hence AIG can make maps showing the bird nesting monitoring for a particular week, the turtle nesting for a season, the rat catching for a month. Although primarily focused on environmental applications, bartering of data for services means the system is moving towards an integrated island-wide asset. And the ability for Conservation to have data on jurisdiction, built environment and other people's activities means they can better judge threats to wildlife and ensure environmental issues are aired when other government decisions are being made.

The project is not just a survey or a map. Although many data sets have been specially created during the project's lifetime, it is more important the system is seen as a repository for spatial information and can be used in every day and strategic government – ie getting good information from the field to the decision makers' desks. The consultants spent three weeks on island in November 2006 to install the system, then train personnel in general GIS principles, system use and management.

Additionally, protocols and procedures were documented and taught to ensure the system remains a multi-agency asset. A steering group was formed to guide future management of AEIOU; hopefully expanding the range of datasets and applications so it can become an island-wide information system.



Mark Francis using the AEIOU GIS interface

The system is a fantastic educational resource and the consultants worked with teachers in Two Boats to identify where in the school's geography curricula Ascension mapping could be used. From this an Intranet mapping tool has been developed around a series of themes – eg topography, coasts and beaches, mountains - and students can add map layers, navigate around the island, print out maps and query data.

AEIOU is one of three OTEP funded GIS with similar aims, frameworks and supporting procedures in the UK Overseas Territories (along with Anguilla and St Helena). The aim is now for these territories to share experiences and ideas; indeed agreement has been reached in principle to let the Prince Andrew School in St Helena have a copy of the Two Boats Intranet GIS and vice versa for the St Helena school system.

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