HM Government of Gibraltar

Department of the Environment

1ˢᵗ Overseas Territories GIS conference

8-9ᵗʰ October 2013

ABSTRACTS

OT GIS Workshop

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Dr. Liesl Torres, Department of the Environment
Setting the scene: GIS - the platform for e-government

The presentation and visualisation of geographic data is a key part of communicating research results and make available to a general and wide public. The step after the collection and analysis of geographic data is publishing and sharing the information obtained. This process requires thinking of cartographic design, geovisualisation and human-computer interaction.

In order to overcome GIS technical requirements and cost, which often limit the potential benefits of GIS to the community, there has been a significant change in GIS technology particularly with the introduction of Google Maps, and other publicly available GIS websites with open source technology.

The presentation focuses on examples of web-based GIS technology (Google Earth) and public participatory GIS which are two techniques to getting the public more aware of geographic information and more involved in decision making process. Both require a similar approach that starts with understanding the community's needs and continues with the design and development of a tool that is customised to meet them. Therefore, there is not one internet mapping application but several and all can empower the users in different way.

In addition, the presentation highlights that making geographic information available, accessible and understandable to the public using Google Earth and PPGIS is not a straightforward operation. In fact, it requires time for designing and testing the applications, for dealing with technical issues and for engaging with the data users. However, the conclusion is positive as, once completed, the whole process of making data usable, interactive and clearly understandable to the broad audience is highly rewarding and has tangible benefits for the community.

Dr. Katie Medcalf, Environment Systems
How GIS can reveal natural capital help inform and support policy decisions

This talk will highlight the advancements in accessibility, usability and awareness of GI Systems and Science in recent years. Our environment is our life support system, it provides our freshwater, food and fuel. However it is under increasing pressure from a growing population, global economic conditions and a changing climate. Increasingly policy decisions are required to consider the spatial impact on the environment and therefore need to be supported by evidence. This talk will show how GIS is becoming an increasingly useful tool in providing this evidence.

Paolo Cavallini, QGIS
QGiS spread over the world – how open source software empowers

The story of QGIS is a good example of the success of a free and open source GIS. Reasons and mechanisms for this success will be discussed together with the advantages this approach gives to users. The imminent future of QGIS will also be discussed.

Stephen Warr, Department of the Environment
Environmental management using GIS in Gibraltar: The case so far

Environmental management is inherently a spatial endeavour (Berry, 2000). The design and implementation of management solutions to contemporary issues of global environmental concern requires a thorough understanding of the interactions between the physical and human elements of our environment. Geographical Information Systems (GIS) are continuously proving to be an invaluable tool in helping visualise and analyse these interactions. Examples of how GIS is being used across Government Departments in Gibraltar to extend record-keeping systems into effective decision support systems will be provided with particular reference to the coastal environment, protected habitats, waste management and contingency planning. An overview of Gibraltar's future GIS development strategy and the relevant legal framework, namely the European Commission's INSPIRE Directive (2007/2/EC), will also be provided together with the role that GIS will play in the wider e-Government initiative

SESSION 3- CASE STUDIES OF NEW TECHNOLOGIES

14:00 - 14:30 Paul Brickle, Falklands
Use of cloud computing as an effective way to pool computing resources for the South Atlantic OTs.

The objectives are for the five South Atlantic Overseas Territories to work together and collaborate through the Falklands Islands based South Atlantic Environmental Research Institute (SAERI) to facilitate the development of a GIS analysis and data management system to support a wide range of conservation projects. This will give all the OTs in the region access to a range of data and provide support and training to all in order to assist them in their use of new and existing environmental data for research and project management. Across the UK SA OTs multiple government departments and organisations have stand alone and independent GIS systems, which utilise a number of different programmes (e.g. ArcGIS, Mapinfo, Manifold, Surfer, CAD and AutoCAD) using different datums for a number of different tasks. This has led to a number of issues including duplication of software expensive software, use of different datums resulting in non-uniform projections and mapping inaccuracies, no uniformity, and no strategy with lack of capacity building. The philosophy behind the centre is standardisation and open source in order to break capacity barriers and ensure rapid development across the OTs. Here we describe the centre's goals, objectives and plans for sustainability.

Paolo Cavallini, QGIS
Demo: QGIS powerful features in data analysis and data management

QGIS is a widespread GIS, known for its ease of use and friendly interface. Less known are its processing capabilities. Now over 600 algorithms are available both internally implemented and relying on several well tested analytical backends from GRASS to SAGA to many more. A review of the variety of tasks than can be accomplished will be presented together with a discussion of the strengths of each option.

SESSION 4 – CASE STUDIES OF HOW USING GIS HAS ENHANCED POLICY MAKING IN THE OT'S

iLaria Marengo, Falklands
Use of Google Earth in 'Community GIS'

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Petra-Manuela Schuwerack, Britannia Royal Naval College @ Plymouth University
An integrated approach to man-made and natural hazard effects on mangrove forests/fringes and their ecosystems in the Cayman Islands.

For the past 350 years the materialistic, mechanistic paradigm has led to fragmentation and isolation in science, economics and society in large. The global community is currently faced with the opportunity as never before to find the path to a holistic truth of sustainable life. During this transition phase there is the evident need to not only identify best integrated

methodologies to highlight issues but much more to re-visit our scientific approach of observation altogether.

Using the case study of the Cayman Islands we investigate the complexity of interconnected man-made and natural effects with the environmental parameters/variables acting upon the mangrove habitats and propose a multi-disciplinary analytical approach using remote sensing, ground truthing, environmental analysis, GIS, spatial and quantitative analysis.

John Pinel, Jersey
Jersey's spatial mapping of biodiversity issues in regard to development control

The use of a database interfaced with environmental geographical information provides the States of Jersey, Environment Department tools to engage with and manage development impacts.

The use of GIS to record the data provided in applications for development permits in Jersey, is leading to a comprehensive data set which enables the Department of the Environment to assess development against a wide range of biological records. This has enabled targeted and efficient screening of development applications in order to protect species and habitats in the Island. The collection of these data provides an informed and evidence based resource on which to base further comments on development applications. Impacts on species and habitats can then be avoided or mitigation measures are required.

Assessing development impacts in this informed manner offers a simple economical process that fulfils several statutory environmental obligations; Natural environment interests; pollution; waste control and agricultural land status interests are all managed through these resources.

Day 2: October 9ᵗʰ

SESSION 6: FEEDBACK FROM DAY 1 AND IDEAS TO INSPIRE

09:00 - 09:30: Katie Medcalf, Environment systems
Recap from Day 1 & Environmental mapping and modelling - How this enables environmental decision making.

Environmental mapping and modelling and how this enables environmental decision making.

This presentation will look at how spatial layers can be mapped to provide a visual description of the biophysical characteristics within the landscape, making links between the physical and biological aspects of habitats and the ecosystem services considered. This approach allows for examination of how these characteristics vary spatially, and how delivery of the underpinning ecosystems service depends on what it is, where it is, what it's on and how it's managed, which have been determined by the use of readily available ancillary datasets.

It will also explore how habitat data layers can be created using Earth Observation methods, in the terrestrial and marine environments, and how these can then be integrated with other biodiversity and environmental information within a rule-base to generate ecosystem service layers.

Gino Pirelli, QGIS
Enjoying the power of QGIS
This presentation will run through examples showing the power of QGIS with the aim of optimising work practices.

Demo - Expanding QGIS functionality

The creation of specific plugins is possible on QGIS. These can be adjusted to specific needs. Hundreds of plugins are available and this demo will provide an overview of the functionality of plugins.

SESSION 7: CASE STUDIES OF USING NEW TECHNOLOGIES TO MAKE EFFECIENCIES

10:45 - 11:15: Calvin Samuel, Anguilla.
Habitat mapping in Anguilla
Anguilla, a British OT and small island developing state in the Caribbean which holds 91square kilometers including its offshore cays are in a zone of high biodiversity and endemism. Anguilla however, shows a lower range of habitat types compared to larger islands to neighbouring continents whose coasts are Caribbean. Today, the natural environment of Anguilla continues to be faced with pressures from the Tourism and infrastructural development sectors. Being an island, entirely coastal, tourism and construction driven while holding higher levels of biodiversity is a balance that can only be equated with information surrounding all named areas. One robust management tool is the use of GIS (Geographical Information Systems), where one can not only identify and collate data collected but also develop maps to guide development decisions as it regards environmental management and infrastructural development. GIS and its varied applications could identify and catalogue all biological diversity, infrastructural development (types and levels), vulnerabilities, compare alternatives and assist in making better informed decisions. It was within these parameters that a Habitat mapping project was developed by the Anguilla Environment Department, so as to address this problem in the most comprehensive manner. The vegetation map developed increased the categorization of what was a very broad map depicting Anguilla's vegetation and respective habitats, vulnerable areas and their distribution.

Jeremy Olynik. Cayman Islands Case Study.
'Marine Ecological Gap Analyses to Enhance Marine Protected Areas for the Cayman Islands'

The Cayman Islands Government Department of Environment, in collaboration with Bangor University, Wales, and The Nature Conservancy, USA has conducted a review of the current Marine Protected Areas of the Cayman Islands to determine whether they are optimal in size and area, appropriately located, and provide maximum resilience. A *Marine Ecological Gap Analysis* utilizing Marxan conservation planning software was a key element of this review.

Marxan is a computer software program that calculates an optimal conservation solution, or portfolio, based on two core data inputs. The first input is a set of conservation features or 'targets'; the second are direct and indirect anthropogenic risks to the marine environment from both marine and terrestrial sources.

The presentation will highlight the methods and results of the *Marine Ecological Gap Analysis* as well outline additional Decision Support Tools and extensive public consultation feedback which generated recommendations for an enhanced system of Marine Protected Areas for the Cayman Islands.

SESSION 8: BEST PRACTICE AND THE WAY AHEAD

Karl Netto, Department of the Environment
GIS best practice - The value attribute data
Just as In the same way a written language is governed by certain rules, so too cartography is guided by cartographic rules (grammar), which are intended to achieve effective graphic communication (Silayo, 2006). The rapid development and adoption of Geographical Information Systems (GIS) technology has in many ways relegated the prerequisite specialist skills of cartographers and replaced them with mass accessibility, software functionality and features. Unfortunately the amount of technological options, methodological approaches and data types available can lead to an almost infinite amount of outputs, which without a standardised workflow and data management process can result in lots of (or no data) to answer the questions posed to the GIS. Attribute data is in many ways the key to informational analysis of spatial data since attribute data transposes a 2 dimensional or even a 3 dimensional map into a 4 dimensional data source. A simplified way of looking at this is that the 'spatial' data are the 'where' and the 'attribute data' are the 'what', adding robustness any to GIS analysis. This presentation will explore the added value of attribute data which today has evolved into a management tool for exploring spatial relationships

Gino Pirelli, QGIS
Demo: Expanding QGis the power of the system
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