Spatial Information Preparedness for Environmental Enforcement in the Maltese Islands

Saviour Formosa, Department of Criminology, Faculty for Social Wellbeing, University of Malta, Msida, Malta
Janice Formosa Pace, Department of Criminology, Faculty for Social Wellbeing, University of Malta, Msida, Malta
Elaine Sciberras, Malta Environment & Planning Authority, Floriana, Malta

ABSTRACT

Spatial analysis of the environment takes place within various competing but parallel domains; physical, social, and natural environments partake to datasets that have the same baseline requirements as are a reliable topographic layer, updated aerial/remote imagery and dissemination tools. The process has proven to be arduous, expensive and barrier-strewn due to data costs, access issues and lack of interactive sites. The Maltese Islands have implemented a system that integrates the transposition of legislative measures as well as ensuring free dissemination through the launching of an initiative based on the Shared Environmental Information System (SEIS). The latter activity sought to take the next step into the dissemination of spatial and environmental data to the academic, scientific and public communities. The Malta initiative was aimed to take national environmental monitoring capacity and the relative enforcement processes to a fully interactive online system, where users can analyse the potential infringements.

Keywords: Aarhus, Data Interoperability, Environmental Enforcement, Geoportal, Infrastructure for Spatial Information in the European Community (INSPIRE), Light Detection and Ranging (LIDAR), Shared Environmental Information System (SEIS), Spatial Data

DOI: 10.4018/ijaeis.2013070101
1. INTRODUCTION

1.1. Barriers to Data Access and Inaccessibility

Implementing environmental monitoring requires a full data cycle approach to ensure that analysis can occur within established protocols and standards. The state of affairs in information management and dissemination is peppered with both success stories and uphill struggles. Users invariably experience various barriers to access to data, high costs, archaic mapping, bureaucratic procedures and data whose currency is unusable in a rapidly changing world. Various initiatives such as the Aarhus Convention (OJ, 2003), the INSPIRE Directive (OJ, 2007) and the Shared Environmental Information System (2012) initiative have been instrumental in enabling the academic and scientific fields to become aware of the availability of data for further analysis. However, the general public lacks an understanding of the use to which such data could be employed at governance and locality levels for both protection of its environmental domains and the resultant requirements for enforcement as a mitigation and deterrent tool. Arming the public with online tools to investigate and report irregularities enables the spreading of a security enhancement akin to physical neighbourhood watch initiatives.

The Malta case study sought to analyse the situation on the ground as at 2006 when most datasets were disparate, basemaps were dated as at 1988, environmental data capture was ad hoc and the dissemination, though through a mapserver was available with a date tag of 2000 whilst data were available to the public on a request basis (Conchin, Agius, Formosa, and Rizzo Naudi, 2010). The data was static and could not be analysed through neither single nor cross-thematic queries as no functionality was available.

The scope of the Malta initiative was to deliver multi-thematic environmental baseline information, inclusive of a comprehensive nation-wide digital terrain and bathymetric model, various environmental and spatial data and the tools required to attain the analysis. The main aim was to deliver the outputs through the dissemination of the project information for free through an INSPIRE compliant online tool. This sequence of events brought to the fore the need for a speedy approach to implement the changes to ensure compliance with the legislative requirements (MEPA, 2009).

1.2. Spatial Legacies

Malta’s interest in the eventual GIS legacy stems from the colonial period (pre-1964) which left a series of imagery and datasets which has progressively been adapted to GI technology. Since the advent of GIS in the late 1980s a major drive was commissioned aimed at the digitisation of the legacy as well as laying the groundwork for the inclusion of cross-thematic data layers within an integrated structure. Whilst costly and at times difficult to implement, Malta today boasts a wealth of information assets that have aided visualization and rapid data transfer, already a mission target in the early nineties (Gatt and Stothers, 1996). This situation has to date been value added with European Union reporting obligations and the need to adhere to international standards (OJ, 2007; Beyer & Wasserburger, 2009).

A brief overview of the history of geographic information systems (GIS) reveals a rapid (post-1985) pace of development in this arena. Figure 1 depicts that the two main phases of the process were based on i) the Digital Mapping/ data collection phase and ii) the GI application phase pertaining to Phase i). This is being enhanced by the implementation of dissemination activities which will ensure the full data transfer from the government-run agencies to the general public and researchers.

A national mapping agency was set up in 1988 with a remit to digitize the basemap which would serve as the launching pad for all the agencies to make happen the development of their data outputs. A ten-year process to digitize all datasets was culminated in 1998, with the first online dissemination output launched in 2000 through the form of a mapserver (MEPA,
Analysis of the Eco-Efficiency Change of Chinese Provinces: An Approach Based on Effect Matrix Analysis
www.igi-global.com/article/analysis-of-the-eco-efficiency-change-of-chinese-provinces/120436?camid=4v1a