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Contractors tendering for MCA bathymetry surveys in Britain's turbulent coastal waters should find their path smoothed with this latest development

Improved tendering with GIS

Dr Mike Cunningham explains how GIS is being applied to enhance the Maritime and Coastguard Agency's bathymetry survey tender selection process

With 97 per cent of all UK trade by weight travelling by sea, a vibrant fishing community, and with many of us using beaches for leisure and sport, the Maritime and Coastguard Agency (MCA) has a remit to ensure 'Safer Lives, Safer Ships, Cleaner Seas' on and around 10,500 miles of UK coastline. It also has responsibility for implementing the Government's maritime safety policy which aims to prevent loss of lives along the coast and at sea, ensure ships are safe and prevent coastal pollution.

One of the key deliverables for MCA is the provision of survey information to maintain nautical charts (marine maps for mariners) through the Civil Hydrography Programme (CHP). The aim of the CHP is to ensure that UK waters are adequately surveyed to ensure safe passage for coastal shipping.

Setting a new course

The 2004 survey season saw the first use of multi-beam echo sounding technologies to gather bathymetric depth information for inclusion in nautical charts. Although this technology provides greater efficiencies, it has made it difficult for MCA when responding to contractors tendering for work. The previous method of single beam survey made it relatively easy to estimate the cost of work on a km² basis. However, the introduction of different models of multi-beam sensor, used on different ships, operating in different sea conditions mean that quotes for work now vary

dramatically from contractor to contractor.

MCA needed a solution which would enable it to validate contractors' bids in an informed, consistent and fair manner, and ensure that the £5 million survey budget is spent in the most efficient and effective way. Furthermore, it was necessary for the solution to be able to provide a method for agreeing payment for changes to the survey programme that occurred mid-contract.

Estimating costs

MCA developed a 'survey costing tool' based on ESRI's ArcInfo and Spatial Analyst software. ESRI ArcObjects, with Visual Basic, was used to bring the required tools together and expose them in a unified user interface.

The survey costing tool allows a number of geospatial datasets and parameters to be analysed in order to generate an estimated cost of survey. The spatial analysis utilises data including:

- The type of echo sounder proposed by the contractor - the survey tool can be configured to take into account proposals which use different survey tools in shallow and deep survey areas. The tool creates a grid of the survey area based on the swath width of the sensors.
- The user defined survey area polygon - used to clip out the data required to perform the analysis. Clipping the data reduces the processing overheads. Data including a grid based on soundings is

