

# Creating Value with GIS?

This article is an adaptation of a lecture presented last February to the Benelux Branch of the Hydrographic society in Delft, The Netherlands. The main question addressed in this lecture was "should a hydrographic survey company utilise GIS?". This question cannot here be unambiguously answered for all organisations but instead a few guidelines are provided to facilitate the decision-making process.

GIS and hydrography do not seem to match if one looks at the limited use of GIS in hydrography in comparison to other disciplines, such as land surveying and environmental surveys. The reason for this phenomena lies perhaps in the fact that survey companies manage very little data, instead concentrating only on acquisition. Most contractors are bound to keep such data for a number of years but in the meanwhile it lies idle.

Quite a few survey companies manage their data on series of CD-ROMS, neatly stored in a fireproof safe with an associated document explaining where data for specific areas and projects can be found. If anyone needs access to this it can be loaded in a matter of minutes. If this is all the management that is needed for the data, then no real reasons will justify the installation of an expensive GIS system.

A GIS is, however, much more than just a tool to manage data; it can analyse, edit, chart and create data. GIS and data management are all too often mentioned together. Without doubt, GIS is the best tool to manage spatial data - but why buy a cow if all you need is a glass of milk?

Most survey companies see their competitors busy with GIS and no one wants to be left behind. The much-heard response to queries as to whether people are active on the GIS front is almost apologetic, something in the nature of: "yes, we should really be doing something with GIS". How, and more specifically, why they should be doing so remains unclear and if one doesn't know where one is going, all roads lead in the right direction. The others are doing it - but what are they doing?

## Why GIS?

Is it really necessary for companies to get involved with GIS data management because others are doing so as well? Data management with GIS is the automated management of data and no more nor less than straight IT. About the use of IT Nobel prize winner Robert Solov once said: "Computers can be found every-where except in the productivity figures of an organisation". Since this comment was made it has been almost impossible to prove the contrary. Companies with the lowest use of Information Technology have the highest productivity figures! Once all information is linked, the chances are that something will go wrong. If something can go wrong, it will go wrong, as Murphy's law tells us.

Only lately have people begun to ask questions as to what all the investments in IT have really brought us. Yet when people talk about GIS they think that this field is somewhat different, that the same laws do not apply. No IT at all in hydrography is, of course, not a viable option; no one would like to create multibeam sounding charts by hand or calculate the amount of soil dredged away between a pre- and a post-survey. But IT should be looked at critically and the installation of a full-blown GIS system with relational databases to manage spatial data is the other extreme.

## GIS Investment Worthwhile?

Is an investment in a GIS system worthwhile for hydrographic surveying companies? Before answering this question it is important to look at the value chain of information in hydrography. Each step towards an end product adds value to the information. Processed data is more valuable than raw data. However, clients are only prepared to pay for the added value of primary processes, such as data acquisition and processing. Enabling processes, such as the number of people needed on a boat to record the data or what kind of Pentium processor is in our computers, are of no interest to the client. "Why use GIS? the client isn't paying for it", is a much-heard objection; quite right too, the client wouldn't pay more for the use of Windows 2000 instead of 98. It is up to the survey companies themselves to create extra value based on GIS investments.

Michael Porter, an American professor who was the originator of the model in Figure 1 stated that the use of IT has profound consequences for how companies compete. The whole structure of a business can be affected; IT introduces new rules, can create added value and reduce costs and differentiation between companies will increase. Some companies may even be outsmarted.

A good example of this is the Gulf of Mexico GIS database as developed by one surveying company. This unique database contains vital data on the positions of offshore platforms, pipelines, wellheads etc. The use of this database contributes to safe working practise by preventing accidents such as dropping anchors near subsea installations. The use of this database is becoming mandatory for work in the Gulf. Furthermore, the time needed to mobilise for a rig move survey has dropped from the two to three days once usually spent on collecting data from different sources to under six hours. The competitive advantage that this database offers the surveying company is unique and illustrates the relationship between IT, competition and productivity.

Creating, storing, organising, distributing and marketing of information are the key components of information processes; the technique that enables these processes is much less important than the information itself. Competition based on IT does not necessarily mean more investment in IT technology, but rather using the information effectively.

If the ground rules of competition change based on the use of IT, the following aspects are important to consider:

- Dynamic GIS/IT solutions with high added value will be what sets survey companies apart in the future
- New or innovative companies have a greater chance at adapting to the changing market
- IT will become core business for survey companies

## When GIS?

So when is it interesting for companies to invest in GIS technology? Figure 2 provides a guideline. A company can position itself on the model by asking itself the following two questions:

1. To what degree are we dependent on accurate information? For survey companies this is usually less than expected. If no information is available, operations can resume the next day without too much damage. This is in contrast to an organisation such as the harbour of Rotterdam, in constant need as it is of good spatial information. A high degree of dependency suggests the necessity of GIS for data management
2. To what degree can we provide added value through the use of GIS? For companies that are able to provide added value, the use of GIS may provide turnaround for the nature of their business. Here it is vital for survey companies to really understand what their client really wants. Surely not paper charts full of soundings? What is the real need behind the request for a chart?

For example, an oil company's answer to both questions would be high and in this case the use of GIS is strategic to their business. Once the choice is made for the implementation of a GIS, then it should be relatively easy to buy and use such a system. This is clearly not the case;

if it was as simple as that many companies would have done so long ago. On the one hand the matter looks relatively easy to realise but from close by it may seem simultaneously so frightening that it is postponed altogether. This is partly due to the costs involved and, as previously explained, this isn't just a question of investment; information needs to be put to use and added value created.

## Whose Choice?

GIS software is no more expensive than any other software and the hardware required is the same as that needed for most office software. The high costs of implementation of a GIS are not those associated with the hard and software but those arising from populating the system with useful information and managing and editing this collected data. Because the costs of a GIS are so high, these cannot be written off on a single project and thus the added value must be made visible. This is clearly a task for the management of survey companies. The question as to whether or not GIS should be used should not be put to the technicians; these are the people who should answer the questions on how, and not if. It is management that must weigh the pros and cons of GIS use on an economic basis and consider in an innovative way whether new products can be created with the use of this technology. No one has ever asked for Post IT notes or a Walkman; demand can be created by supply.

In this information economy we compete on the basis of our capacity to acquire, treat, interpret and use information effectively. Organisations that possess this skill will become the winners of the future, while others will risk being outsmarted by their innovative competitors.