



Redrawing old maps

A case study of national mapping organisations in South Africa suggests that business strategy principles can help improve public sector service delivery.

by Michelle Denner and Hein Oosthuizen

Mapping organisations play an important role worldwide to provide governments with the geospatial information they need for planning economic growth and other programmes of national interest.

In South Africa, the National Mapping Organisation (NMO) is a key component of the mapping

service providers to government. Prior to 1995 the NMO functioned under the auspices of the office of the Chief Directorate: Surveys and Land Information in the Department of Land Affairs (DLA). After 1995, a separate national mapping directorate was formed and named the Chief Directorate: Surveys and Mapping, with the chief director as head of the NMO. For

several reasons – including the constraints of being part of the government sector and a substantial loss of skills – the NMO has largely failed to keep up with the increasing demands for innovative products.

In 2000, the government rejected a recommendation by consultants to reposition the NMO outside the public sector. A task team that was

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subsequently appointed proposed that the NMO change from a product-driven to a client-driven organisation. But the scope of this advice was too narrow to make a meaningful difference to the functioning of the NMO. This unsatisfactory state of affairs triggered research at the University of Stellenbosch Business School (USB) that proposes a new strategy for the mapping industry in South Africa.

In its present configuration, the mapping industry is poorly coordinated and effective service delivery is therefore hampered

The study investigated the situation by applying a range of analytical tools more generally associated with the business world. The findings made it clear that the South African mapping industry is fragmented and characterised by complex inter-industry networks. The NMO, the Satellite Application Centre (SAC) and Statistics South Africa (Stats SA) are the prominent role-players, and each organisation supplies important parts of the geospatial information required by government and other commercial clients. However, in its present configuration, the mapping industry is poorly coordinated and effective service delivery is therefore hampered.

To generate better value for taxpayers' money, the main role-players, including the NMO, need to be strategically repositioned in a collaborative and mutually supportive framework that can benefit the industry as a whole.

Challenges of a new landscape

Like their counterparts in the business world, leaders in the public sector today face numerous and turbulent external challenges. Not long ago, strategic thinking in public organisations worldwide focused mainly on managing internal resources and efficiencies. But the pace of global change has rendered such a conservative approach inadequate. In many countries, public sector

leaders are now adopting strategic management processes that were, until recently, only found in the private sector.

In Africa, many governments have recognised the need for strategic reforms to improve the quality of life of their citizens. Concepts such as the centrality of the citizen as customer and accountability for results have been popularly voiced, but practical progress in this regard has been slow. In South Africa, too, the government has committed itself to sound management of the country's resources and a more strategic approach to the delivery of services. Top government officials have already mooted the idea that certain related government departments should be clustered together into more integrated and synergistic models of delivery.

The case of the NMO and national mapping services in South Africa, however, is a good example of a situation where these objectives are not carried through in practice. Accurate and up-to-date geospatial information is a vital input to the design of, inter alia, defence, emergency services and economic policies. Most countries ensure that they have well-designed delivery mechanisms in place to serve their particular development needs.

Against this background, research at the USB examined the shortcomings in national mapping services and demonstrated how the application of business world strategic thinking can benefit public sector organisations.

■ Surveying the current landscape

The USB study made extensive use of published information relevant to the mapping industry, including international research papers, government mandates, policy documents, legislation and

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in-house documentation pertaining to the NMO. In addition, the opinions of people in the industry were targeted. In-depth interviews were conducted with seventeen people in senior positions in mapping organisations (in the public as well as private sectors) and in different government departments that use mapping information.

The research solicited a variety of data to do strategic evaluation by using a range of well-known

Business strategy diagnostic framework

A. External focus on the industry

Macro-environmental analysis
The PESTE framework (political, economic, social, technological and environmental)

Industry attractiveness evaluation

- a. Industry profile: current characteristics
- b. Forces driving change in the industry
- c. Industry strategic landscape (using Michael Porter's five-forces model)
 - The level of rivalry
 - The threat of new entrants
 - The threat of substitute products
 - The power of buyers
 - The power of suppliers
- d. The strategic positions that industry rivals occupy (strategic map)
- e. Industry key success factors

B. Internal focus on the organisation

Internal strategic analysis

- a. The strategic intent of the organisation
- b. The current strategy of the organisation
- c. The structure and functioning of the organisation's value chain

Strategic business actions and themes flowing from:

- a. A SWOT analysis
- b. An assessment of the organisation's competitive strengths

strategy diagnostics. The analytical tools used for this investigation are shown in the box **above**.

■ External industry analysis

The key theme revealed by the **macro-environmental analysis** is the political intent to sustain economic growth. This presents significant growth opportunities for the South African geospatial industry.

The **industry attractiveness evaluation** lends support to these growth prospects.

- Globally, it has become a multi-billion-dollar industry that is growing at a rate in excess of 10% annually. This trend is expected to be similar in South Africa.
- The industry is also boosted by technological advances and the increasing availability of satellite imagery, as well as the growing awareness

of the use of geospatial information created by, for example, Google Earth. Technological advances are a major force changing the industry. In particular, expensive new technology may lead to an increased emphasis on economies of scale. In future it may be advantageous to pool resources in order to benefit from economies of scale in using advanced technologies.

- Based on Porter's five-forces analysis, the industry appears relatively attractive as no particular force dominates the balance of power. The power of buyers, with the government as the major buyer, is perhaps the most dominant force. This fact is also reflected by an analysis of industry success factors, where the ability to satisfy the demand of government for geospatial information emerges as the most important criterion.

A deeper analysis of the industry and of the **strategic positioning** of rivals reveals a fragmented industry, a situation which is further complicated by the need for rivals to cooperate at times in complicated delivery networks. In this regard, one of the important **industry success factors** that emerged from the research is the ability to



coordinate collaboration between concurrent suppliers of geospatial information.

Internal strategic analysis of the NMO

The **strategic intent** of the NMO is governed by a strong mandate that gives its role both political and legislative sanction. The national emphases on economic growth and land reform continue to place importance on the role of the NMO and the mapping industry in general.

The **strategy** of the NMO has gradually shifted from being primarily the lowest price supplier (cost-leadership strategy) towards providing more specialised products with a focus on high-quality imagery (differentiation strategy). This shift demands that more attention be given to the service levels accompanying the NMO's products as well as to its marketing activities. The analysis shows that the organisation has not fully adapted to these new demands and, in particular, does not afford adequate importance to customers and their needs.

The strategy is implemented via a well-structured **value chain**. The analysis shows that 75% of the NMO's production processes are outsourced to external contractors, which gives the organisation a high degree of flexibility in capacity to keep turnaround times lower. But the support side of the value chain reveals two pertinent problem areas:

- A major problem is that the NMO lacks adequate technology development. This is attributed to poor retention of highly qualified staff as well as

the high workload of the available staff. Hardly any time is spent on research and development.

- Procurement and supply-chain management are administered externally via an arrangement with the DLA. Consequently, the NMO has too little control over order or supply delays, which impacts negatively on the organisation's turnaround times. Suppliers to the NMO often refuse to commence work while awaiting official orders. The settlement of invoices is, likewise, prone to delays, which causes cash-flow problems for suppliers.

The analysis of the NMO value chain reveals a number of core and distinctive competencies, specifically the skills to process high-quality products at relatively low cost and the geometric accuracy of its products, which is unrivalled by the

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NMO's major competitors. Unfortunately, the lack of technology development and the drain of skilled staff may soon erode these advantages.

The last part of the investigation attempted to identify **strategic business actions and themes** by means of a SWOT analysis and an assessment of the competitive strengths of the NMO. Despite

a number of strengths, weaknesses that stood out were the staff shortages and retention problems as well as the unreliable external procurement function over which they have little control. Another weakness appears to be inadequate management training. A more than likely threat is that other players in the industry with similar capabilities may encroach on the NMO's mandate.

The **competitive strength assessment** ranks an organisation, relative to its rivals, on those factors that are considered industry success factors. The study found that the NMO is in a relatively strong position with regard to its product quality, production capability – including the capability of its outsourcing partners – and cost of delivery. But it is in a weak position when it comes to product innovation and, to a lesser extent, customer service capability. These factors clearly indicate the areas that should receive attention in a future strategy and the competitive strengths on which the NMO can capitalise, as well as those weak areas that it should strengthen to ensure that its competitiveness does not gradually evaporate.

A fragmented terrain

The picture that emerged from the research led to a number of important observations:

- The South African mapping industry is fragmented, with a few powerful rivals that have similar, but also complementary, strengths. The prominent organisations are the NMO, Stats SA, and the SAC. There is often a need for products that require cooperation between these industry players but under the present arrangement, cross-organisational tasks are complicated and difficult to manage.
- Although each organisation – as in the case of the NMO – may have particular strengths and

internal efficiencies, the delivery of geospatial information to government on the whole appears to be suboptimal. Such a situation runs counter to government's intentions to cluster synergistic services together in order to make the delivery of important services more streamlined and cost-effective.

Reconfiguring the map

The proposed solution entails a reorganisation of the industry: a strategic repositioning of the NMO and the other role-players under one umbrella, which will be government in this case. The study has shown that the industry as a whole is substantial and that the volume of work related to geospatial information is growing at an attractive pace, which is a global trend. It is therefore worthwhile to invest resources in the restructuring and optimisation of the industry.

An evaluation of the three major organisations reveals several areas of strategic fit between the respective value chains. For example, they share similar purchasing and operations processes. There is also a high degree of fit between the technology of the NMO and the SAC. The opportunity for combining technology acquisition, technical skills, and research and development programmes seems very attractive.

Other areas of potential synergy include marketing and sales, common distribution channels, building a common brand name, and combining after-sales service activities.

For government, restructuring the geospatial industry should be an attractive option. By making use of business strategy models, this research has presented a clear example of how the achievement of effective service delivery can be hampered through the inappropriate organisation of public sector activities.

But the study has also shown how a public sector industry could be realigned towards achieving the strategic objectives of the Accelerated Shared Growth Initiative for South Africa (AsgISA). Such restructuring is in line with one of the central themes of government, which is to look at how greater stakeholder value can be achieved through better organisation of its activities.



Michelle Denner

This study was conducted by Michelle Denner (mdenner@sli.wcape.gov.za) as her MBA research project at the USB, supervised by Prof Hein Oosthuizen. The research report, *Reorganising public sector activities: A case study of national mapping activities in South Africa*, was presented in 2007. The research was subsequently published by H Oosthuizen in the *South African Journal of Business Management* (September 2008), under the title *The strategic positioning and configuration of national mapping organisations as enablers of economic and social growth in South Africa*.



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