

SECTION 3(a): MAKING THE GIS EFFICIENT, EFFECTIVE, AND SAFE TO USE

Introduction

THE EDITORS

There is no point whatsoever having a GIS if it does not work efficiently, effectively, and reliably. No organisation functioning in a competitive environment – in commerce, academia, or even government (where benchmarking of performance is becoming more common) – can afford to carry such burdens for long. For this reason, the decisions of whether to have a GIS, which one to have and how best to operate it are central management issues.

Tor Bernhardsen, a senior consultant in the Norwegian firm of Asplan Viak and an author of a successful book on GIS, initiates this Section (Chapter 41). He describes the strategic and tactical issues involved in selection and procurement of a GIS. As the availability of commercial off-the-shelf (COTS) systems has improved, as costs for given functionality have fallen, and as the average size of the enterprises obtaining GIS has decreased, so the approaches to purchasing of systems have evolved. Yet, despite COTS, tailoring of software is normally employed and the ‘final’ form of the system is rarely easy to define accurately at the outset. As a consequence, much effort is now devoted to selecting a supplier in whom the purchaser has confidence and with whom a constructive and honest relationship, bringing mutual benefits, is readily possible.

Nancy Obermeyer’s contribution (Chapter 42) deals with predicting the costs and benefits of use of a GIS. The relationship with Bernhardsen’s concerns is obvious. There are some differences in emphasis between the public and private sectors in the weights given to different accounting approaches. In general, however, the formal treatment of tangible benefits is

similar and involves assigning a price to the benefits. Yet assigning costs and benefits to the more intangible consequences of implementing GIS is more difficult, especially insofar as general societal benefits are rarely easy to value. Traditional government and private sector organisations tend to take different attitudes to unmeasurable but potentially society-wide benefits!

Assume that senior managers have been convinced by the business case for procurement of a GIS and that selection and installation of the system has proceeded well. How then is the system best managed to ensure it is efficient and effective? Larry Sugarbaker – a veteran of running successful GIS installations – describes the management processes and procedures which underlie reliable and efficient operations (Chapter 43). Given both the number of things that can detract from good performance and that no GIS is unchanged for ever, high order project management skills are required. The need for good relationships between the GIS management – if it is separately managed – and that in the rest of the organisation is also stressed. Finally, ‘future proofing’ is considered from a management perspective.

If Bernhardsen, Obermeyer, and Sugarbaker deal with the everyday (yet vital) considerations of managers, institutional success requires more than a concern with these issues alone. Heather Campbell relates the findings of much research into the influence of how organisations perceive their information systems (Chapter 44). Those who regard GIS and other information technology as capable of being run simply on ‘cookbook’ instructions are doomed to failure. She outlines three different

managerial perspectives – technological determinism, managerial rationalism, and social interactionism – and argues that adopting the last of these materially enhances the chances of GIS success within an organisation.

As GIS use increases, ‘second generation’ problems are starting to emerge. Data producers, system vendors, and integrators – and even users – are increasingly concerned with uncertainty in the systems and results. Gary Hunter discusses management approaches to cope with data, software, or human errors or from their interactions with the objective of minimising their consequences and reducing risk (Chapter 45). In so doing, he draws upon other chapters in the Principles and

Technical Issues Parts (e.g. Beard and Buttenfield, Chapter 15; Egenhofer and Kuhn, Chapter 28).

For any operational system which produces results which impact on individuals or groups outside the organisation, a significant (and growing) concern is the legal liability for these results. Harlan Onsrud shows how liability is a creation of the law to cope with injurious behaviour, encourage the fulfilment of contractual obligations, and assign losses to those responsible for them (Chapter 46). He outlines some of the key areas in which liability is likely to be incurred in GIS, using scenarios to illustrate the law of tort and contract. Even outside the American context, resort to law is likely to become more commonplace in GIS-related activities.