

Installed water resource modelling systems for catchment management agencies

MC Dent

Computing Centre for Water Research, c/o University of Natal, P/Bag X01, Scottsville 3209, South Africa

Abstract

Following international trends there are a growing number of modelling systems being installed for integrated water resource management, in Southern Africa. Such systems are likely to be installed for operational use in ongoing learning, research, strategic planning and consensus-building amongst stakeholders in the catchment management agencies (CMAs). These installed systems are poised to change fundamentally, the way modelling is approached in Southern Africa. They are a logical and irreversible response to the enormous forces which have led to the revision of the South African Water Law and the water resource management paradigms which it embodies.

This paper examines the business forces behind this paradigm shift and it explores the evidence of the changes already taking place in terms of the modelling technology and the organisational and individual responses. Such installed modelling systems are essential for the social process of water allocation as well as for dealing with externalities.

Given the paucity of observed data in Southern Africa, it follows that in many decision-making situations the model is not required to produce accurate answers, for we would have no way of checking their accuracy. Rather it is a tool to help organise a negotiation or learning process in which its primary function is to provide a framework for thinking by enabling the participants to make their implicit assumptions explicit in a systematic manner. This, in turn, provides a means for stakeholders to visit the possible consequences of their intended actions. The creativity and opportunities for compromise which this process releases is where the real benefit of modelling lies.

Recurrent themes in this paper will be the business, technical and human resource issues pertaining to the use of installed modelling systems in the social process of water allocation.

Introduction

The hydrological world is already interrelated. We do not have to create its interrelatedness. Our challenge is to enable our organisations and scientific disciplines to achieve a measure of interrelatedness so as to understand better and, hence, manage within the hydrological world. This interrelatedness is explicitly recognised in the New Water Act and has resulted in institutional and management changes.

One such change is that, following international trends, there are a growing number of modelling systems being installed for integrated water resource management on a catchment basis in Southern Africa. Such systems are likely to be installed for operational use in ongoing learning, research, strategic planning and consensus-building amongst role players in the CMAs. These installed systems are poised to change the way modelling is approached in Southern Africa. They are a logical and irreversible response to the enormous forces which have led to the revision of the South African Water Act and the water resource management paradigms.

Recurrent themes in this paper will be the business, technical and human resource issues pertaining to the use of installed modelling systems in the social process of allocation.

Forces driving the creation of installed water resource modelling systems

The water resource modelling industry, like any other, is shaped primarily by the external environmental forces operating on the

business of the industry. In Southern Africa these forces have changed substantially over the past 10 years. Political change has been profound. This has led to large changes in the social forces and paradigms and to the rising economic value of water as aspirations are released. The political, economic and social forces of globalisation have also been substantial and computer communications technology is in the forefront of the external technological forces shaping the industry. The direction of change induced by the information technology revolution is not predestined as may be presumed. Quadir et al. (1999) writing for the Global Water Partnership initiative which is developing a World Water Vision for 2025 state that;

“the impacts of information technology on the water sector are not inherent in the technology but largely depend on the way society chooses to use the technology. The new technology does offer unprecedented possibilities to change knowledge relationships which impact on power relationships and consequently on organisations and society at large.” (Quadir et al., 1999)

One of the significant effects of the rising value of water has been a redistribution of intellectual power in the water science field.

Re-alignment of intellect

Twenty-five years ago most of the water resource science and management intellect resided in state departments. Such an intellectual power setting was adequate to cope with the “get more water” and the “use water more efficiently” eras. Today a significant intellect resides with stakeholder groupings who are in contention for water resources. This shift in the balance of intellectual power holds important strategic implications for the development and use of integrated water resource modelling systems which are used in

☎(033) 260-5177; fax (033) 260-6288; e-mail: dent@aquac.cwr.ac.za
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