

## **Building SDI Bridges for Catchment Management**

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### **Abstract**

This research paper discusses the importance of spatial data and Spatial Data Infrastructure (SDI) for catchment management. It reviews four SDI theories including hierarchical spatial theory, diffusion theory, evolution theory and principal-agent (P-A) theory and discusses their characteristics and potential utilisation for catchment management. As catchment management issues are characterised by multi-level stakeholder participation in SDI implementation, the theory of hierarchy and the P-A theory may assist in exploring in greater depth the context of building SDI at the catchment level. Based upon existing SDI theory, it explores a conceptual framework and its implications for more effective development of catchment-based SDI. The framework which is based upon hierarchical theory, investigates the communitygovernment interaction between various catchment and administrative/political levels for developing SDI. Such a framework is complex and potentially has many levels. Additionally, the cross-jurisdictional linkages required to implement this framework within the existing administrative/political SDI framework also need to be carefully examined. The framework is explored through a case study of the Murray-Darling Basin in Australia, one of the world's largest catchments. The challenges for developing an SDI which effectively supports the decision making within and across this catchment will be discussed and the potential strengths and weakness of the proposed framework identified in the context of this case study.

**Keywords:** spatial data infrastructure (SDI), catchment