

# **Standards for exchanging digital geo-referenced information**

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The purpose of this dissertation is to assess digital geo-referenced information and standards for exchanging such information, especially the South African National Exchange Standard (NES). The process of setting up a standard is exacting. On the one hand, the process demands a thorough scrutiny and analysis of the objects to be standardised and of all related concepts. This is a prerequisite for ensuring that there is unanimity about their meaning and inter-relationships. On the other hand, the process requires that the standard itself be enunciated as succinctly, comprehensibly and precisely as possible. This dissertation addresses both these facets of the standards process in the context of standards for exchanging digital geo-referenced information. The dissertation begins with an analysis of geo-referenced information in general, including digital geo-referenced information. In chapters 2 and 3, the various aspects of such information are scrutinised and evaluated in more detail. The examination of concepts is backed up by a comprehensive Glossary of terms in the domain under discussion. Chapter 4 examines the nature of standards. It also proposes a novel way to approach a standard for the exchange of digital geo-referenced information: namely, that it can be viewed as a language and can accordingly be specified by a grammar. To illustrate the proposal, NES is fully specified, using the Extended Backus-Naur Form notation, in an Appendix. Apart from the advantages of being a succinct and precise formal specification, the approach also lends itself to deploying standard tools such as Lex and yacc for conformance testing and for developing interfaces to NES, as illustrated in a second appendix. As a final theme of the dissertation, an evaluation of such standards is provided. Other standards that have been proposed elsewhere for purposes similar to that of NES are surveyed in chapter 5. In chapter 6, features of NES are highlighted, including the fact that it takes a relational approach. Chapter 7 concludes the dissertation, summarising the work to date, and looking ahead to future work.