Foreword

Two decades ago geospatial Web services, the subject of this book, would have been almost impossible to imagine. The first Web browser was still three years away, and while the Internet was among the most successful of the various competing electronic networks, it was by no means as dominant as it became five years later. Geospatial services were provided by geographic information system (GIS) software operating on stand-alone Unix machines or on minicomputers and delivered over local-area networks. The notion that one day it would be possible to invoke services from remote machines using simple interfaces would have seemed like an impossible dream.

How far we have come in two short decades. Geospatial Web services are proliferating rapidly, and are familiar to almost anyone blessed with a high-speed Internet connection from a home computer, laptop, or third-generation phone. We rely on such services to find our way in strange cities, to locate businesses, to make hotel reservations, and a myriad of other daily tasks. Moreover most if not all of the more sophisticated GIS operations needed by planners, researchers, resource managers, utility companies, and virtually every other occupation of the 21st Century are also available from industrial-strength GIS servers.

This book comes at an appropriate time, and fills a niche that has emerged recently in the GIS book-shelf. It describes applications of geospatial Web services to many areas of human activity, from research on global environmental change to the planning of transit systems and to emergency management. The core concepts of Web portals, service-oriented architectures, and spatial data infrastructures are covered, and the book identifies and examines some of the fundamental issues, including the granularity of functions, semantics, and the standardization of functionality.

The book will be invaluable to anyone working in this rapidly developing area. Geospatial Web services are an increasingly important part of the education of any GIS professional, but often too new to be treated in any depth in the standard curricula and textbooks. The book will also be an excellent text for more specialized courses, at the upper undergraduate or graduate levels, and as reading matter for practitioners.

The editors and authors are to be congratulated for bringing together such a powerful collection, and for having the foresight to see the potential of this field. Much remains to be done, however, and the field is still in its infancy. It is still difficult, for example, to achieve the holy grail of the spatial join, because so many forms of uncertainty pervade geospatial data. We still do not have a clear, standard taxonomy or ontology of spatial functions, making a mockery of efforts to build systems for search and discovery of geospatial Web services. And while we have many technologies for supporting various aspects of geospatial Web services, it is still difficult for a novice to navigate through the numerous standards and software alternatives. We can be confident, however, that many of these issues will be resolved in time

if the research community addresses them with imagination and vigor, and that the task of building a practical, operational application of chained geospatial Web services will become easier with time.

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