

TABLE OF CONTENTS

PREFACE IX

ACKNOWLEDGMENTS XIII

CHAPTER 1 GIS IN THE WEB ERA 1

Pinde Fu and Jiulin Sun

- 1.1 The Web and GIS 2
- 1.2 Web GIS origins and evolution 7
- 1.3 Web GIS concept 13
- 1.4 Web GIS applications 16

CHAPTER 2 TECHNICAL BASICS 25

Pinde Fu, Fang Yin, and Jiulin Sun

- 2.1 Web fundamentals 26
- 2.2 Web GIS basic architecture and components 33
- 2.3 Thin versus thick client architecture 40
- 2.4 User experience design 45

CHAPTER 3 GEOSPATIAL WEB SERVICES 49

Pinde Fu and Jiulin Sun

- 3.1 From Web sites to Web services 50
- 3.2 Geospatial Web service functions 56
- 3.3 Web service types 61
- 3.4 Interoperability and geospatial Web service standards 68
- 3.5 Optimizing Web services 82

CHAPTER 4 GEOSPATIAL MASHUPS 89

Pinde Fu and Jiulin Sun

- 4.1 Evolution and impact 90
- 4.2 Web contents, functions, and interfaces 96
- 4.3 Mashup design and implementation 104
- 4.4 Challenges and prospects 110

CHAPTER 5 MOBILE GIS **115**

Pinde Fu

- 5.1 Uses and benefits 116
- 5.2 Supporting technologies 121
- 5.3 Solutions and products 127
- 5.4 Application case studies 132
- 5.5 Challenges and prospects 138

CHAPTER 6 GEOPORTALS **143**

Pinde Fu, Juanle Wang, and Jiulin Sun

- 6.1 Concept and uses 144
- 6.2 Functions and architectures 148
- 6.3 Geoportal case studies 158
- 6.4 Challenges and prospects 166

CHAPTER 7 NSDI IN THE WEB 2.0 ERA **173**

Pinde Fu and Yaochen Qin

- 7.1 From data duplication to Web services 174
- 7.2 Sharing Web services 179
- 7.3 Assembling Web services 187
- 7.4 Challenges and prospects 194

CHAPTER 8 WEB GIS APPLICATIONS IN E-BUSINESS **199**

Monica Pratt and Pinde Fu

- 8.1 Introduction to e-business and geobusiness 200
- 8.2 Types of applications 205
- 8.3 Challenges and prospects 216

CHAPTER 9 WEB GIS APPLICATIONS IN E-GOVERNMENT **221**

Monica Pratt and Pinde Fu

- 9.1 Introduction to e-government and geogovernment 222
- 9.2 Types of applications 227
- 9.3 Challenges and prospects 243

CHAPTER 10 HOT TOPICS AND NEW FRONTIERS **249**

Pinde Fu, Yunqiang Zhu, and Jiulin Sun

- 10.1 Areas of research 250
- 10.2 Future trends 271

LIST OF ABBREVIATIONS **281**

INDEX **289**
