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BOOK REVIEW

Mashrur A. Chowdhury and Adel Sadek. "Fundamentals of Intelligent Transportation Systems Planning." *Artech House ITS Library. Boston and London: Artech House, 2003. ISBN 1-58053-160-1.*

'Fundamentals of Intelligent Transportation Systems Planning'

by Michael S. Bronzini

One of the voids in the textbooks and professional literature devoted to intelligent transportation systems (ITS) has been a definitive treatment of the planning aspects of ITS. This book is a notable attempt to fill that void, as its stated purpose is "to present fundamental knowledge on various topic areas that are necessary for successful ITS planning."

The book comprises nine chapters. The short introductory chapter purports to answer the question: What is ITS? Unfortunately, a reader with no prior exposure to ITS will still not know the answer after reading this chapter, since it is very general and notably devoid of useful descriptions and examples. Chapter 2 covers traffic flow theory and control, including such topics as the Greenshields model, basic shock wave theory, traffic signal timing, and ramp control systems. In most cases, the treatment is descriptive, rather than quantitative. The chapter concludes with a brief description of traffic simulation models, at the level of name-dropping (Corsim and Integration).

Chapter 2 adds little value to the book. It doesn't provide enough detail and practical examples to help the reader become proficient in traffic control analysis and design, and the concepts presented are not made use of later in the book. It would have been better for the authors to assume that the reader has had prior instruction or experience in traffic analysis, relegating any traffic analysis material deemed essential for later chapters to a brief appendix.

The book finally hits its stride in Chapters 3 and 4. Chapter 3 is an excellent description of 32 ITS user services, including such functions as pretrip travel information, route guidance, traffic control, incident management, electronic payment services, commercial vehicle electronic clearance, emergency vehicle management, collision avoidance, and so on. It is relatively up-to-date, in that it includes two user services that were added fairly recently—archived data, and maintenance and construction operations. Illustrating how difficult it is to keep up with the rapidly evolving ITS world, the 33d user service, disaster response and evacuation, has been added since this book appeared.

Chapter 4 provides a fairly extensive treatment (38 pages) of ITS applications and benefits, subdivided into sections describing freeway and incident management systems, advanced arterial traffic control systems, advanced public transportation systems, and multimodal traveler information systems. The chapter is replete with examples of actu-

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al projects deployed in cities throughout the US. After completing Chapters 3 and 4, the reader will have a good understanding of ITS.

Chapter 5 presents the problematic national ITS architecture. The national architecture is regarded by many traffic engineering professionals as a necessary evil, largely because the systems engineers who developed it did so using the language and tools of systems engineering, with scant effort to translate it into terms readily understood by transportation professionals and public officials. The result is a massive, and massively boring, document that is difficult to penetrate. In the view of some experienced traffic professionals, a competent ITS team could likely produce an integrated ITS deployment that is functionally compliant with the national architecture without ever referring to the document, but there is also a significant danger that an ITS team could produce nonintegrated applications lacking interoperability, hence the "necessary" part of the evil. In this chapter the authors present the national ITS architecture in a straightforward manner, starting with its rationale and proceeding into good descriptions of its various layers. Topics covered include the concept of operations, user services and requirements, logical and physical architectures, and equipment and market packages. The chapter has brief illustrative examples, greatly enhancing its understandability. The chapter concludes with a discussion of using the national architecture to develop a regional ITS architecture, and the Turbo Architecture software tool available for this purpose. While this chapter won't make anyone an expert on ITS architecture, it does remove some of the mystery and could inspire some to explore the source documents, and others to at least tolerate architecture systems-speak.

Building on Chapter 5, Chapter 7 discusses the topic of ITS standards and their important role in ensuring the interoperability and interchangeability of ITS components (hence, this material probably should follow immediately after Chapter 5). Here, the authors not only describe the process by which recognized standards development organizations promulgate ITS standards but also summarize the major classes of standards that are under development. After reading the introductory material in this chapter on why standards are important and how to find them, most readers can safely skip the rest of the material.

The remaining chapters discuss the planning-related aspects of ITS in some detail, thus fulfilling the intent of the book. Chapter 6 discusses how to integrate ITS into the transportation planning process, effectively articulating how ITS options and considerations fit within each step of both urban and statewide planning. A detailed case study is included. Chapter 8 discusses evaluation of ITS projects, with emphasis on ITS deployment tracking, benefits, and impact assessments. Chapter 9 concludes the book with brief treatments of the major challenges and opportunities facing ITS, including mainstreaming ITS into the normal transportation project development process, future upgrades of ITS deployments, system integration, workforce training, privacy issues, and the role of ITS in enhancing national security.

In summary, Chowdhury and Sadek have produced a book that should be useful as a text for introductory courses in intelligent transportation systems and also as a shelf reference for practicing transportation planners and traffic engineers.

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