Review of the book

"Multi-application Smart Cards Technology and Applications "

by Mike Hendry

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Yeşem Kurt Peker
TSYS School of Computer Science
Columbus State University

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1 Summary of the review

The book covers various aspects of smart cards including the technology to make them work, readers and terminals to communicate with them, the requirements of the various business sectors on smart card applications, their implementation and management, and standards pertaining to smart cards. It is comprehensive but condensed and as such is most beneficial to readers with some background in communication technologies. In particular, it is an excellent resource for someone who has a textbook knowledge of smart card technologies and want to learn about their applications in real life. In addition to the discussions about deploying smart cards for various applications, the book includes case studies where several examples of usage and management of smart cards in various business sectors from all around the world are provided.

2 Summary of the book

The book is divided into four parts: Introduction, Technology, Business Requirements, and Implementation.

The first part, in three chapters, provides a brief background on smart cards; discusses when a card is "multi-application", and introduces the reader to smart card basics such as the memory, processor, interfaces, card readers and terminals for communicating with the cards, and standards developed for these communications.

The second part, *Technology*, consists of nine chapters that focus on various technologies used in credit cards to provide the functionality required of them. Chapter 4 discusses the need for identification and talks about technologies for biometrics. Chapter 5 focuses on the security of smart cards; it discusses possible attacks and deploying cryptographic tools to prevent them. It also briefly

covers the security standards for smart cards. Chapter 6 is on the main hardware components of a smart card, namely the microcontroller (its architecture, size, and memory type), the card itself (the material, construction, shape), and the interface (USB, contactless cards). Chapter 7 discusses the requirements on different types of card readers and terminals and their management. Application selection is the most essential function in a multi-application smart card and as such plays a pivotal role in its and its reader's design. Chapter 8 reviews the requirements for application selection and the options for cards and terminals to implement the application selection function. Chapters 9 through 11 discuss the operating systems used in smart cards. Chapter 9 focuses on JavaCard-GlobalPlatform and Chapter 10 focuses on Multos. Chapter 11 looks at other operating systems with specific multi-application features. Rest of part 2, Chapter 12, addresses the complexities in smart card management systems and provides some information about the concerns in these systems. The chapter also includes two case studies that give examples of organisations deploying smart card management systems and show some of the lessons learnt in the process.
After a brief discussion of general business requirements such as card issuing, terminal management, operations, security, trust and liability in Chapter 13, the third part of the book, *Business Requirements*, looks at various business sectors and requirements specific to these sectors in issuing, processing, and managing cards in Chapters 14 through 18. The sectors covered are telecommunications (phone cards, mobile telephony, satellite and cable television, Internet services), banking (EMV, contactless cards, electronic purses, token authentication), transportation, government and citizens' cards (e-passport, id cards, health cards, student cards), and campus cards and closed user groups (employee card schemes, schools, holiday camps, clubs, prisons, detention centers). Each chapter is provided with one or more case studies that discuss the deployment of smart cards in various settings from around the world. Each case study includes information about the organization, what the requirements were in the smart card deployment, how these requirements were met, problems encountered during the process and the outcome.
The last part of the book, *Implementation* provides insight into business aspects of defining and conducting a project to deploy smart cards and touches on topics like corporate culture, stakeholders in the business, trust hierarchies, liability, commercial requirements, and implementation. The book closes with a Prognosis chapter where the author briefly discusses possible future developments in the technology related to smart cards and the applications they can be used for.

3 Would you recommend this book?

I would recommend the book to readers with some background in communication technologies. It is comprehensive but condensed and technical, in particular in the chapters where the technology is discussed (Part II of the book). It is an excellent resource for people who has a textbook knowledge of smart card technologies and want to learn about their applications in real-life. The inclusion of case studies where usage and management of smart cards in various business sectors from all around the world makes it particularly helpful in understanding

how smart cards are used in practice and the concerns in their implementation and management.

The reviewer is an assistant professor at the TSYS School of Computer Science at Columbus State University in Columbus, GA.