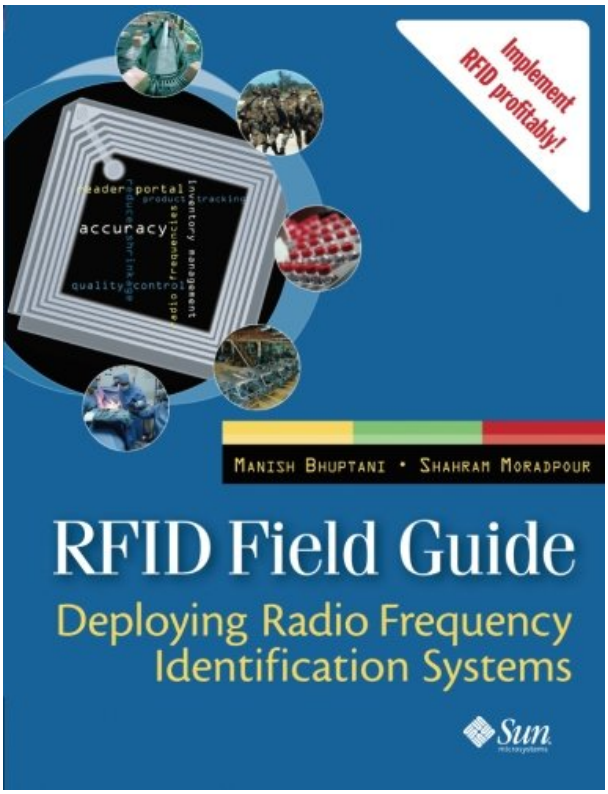
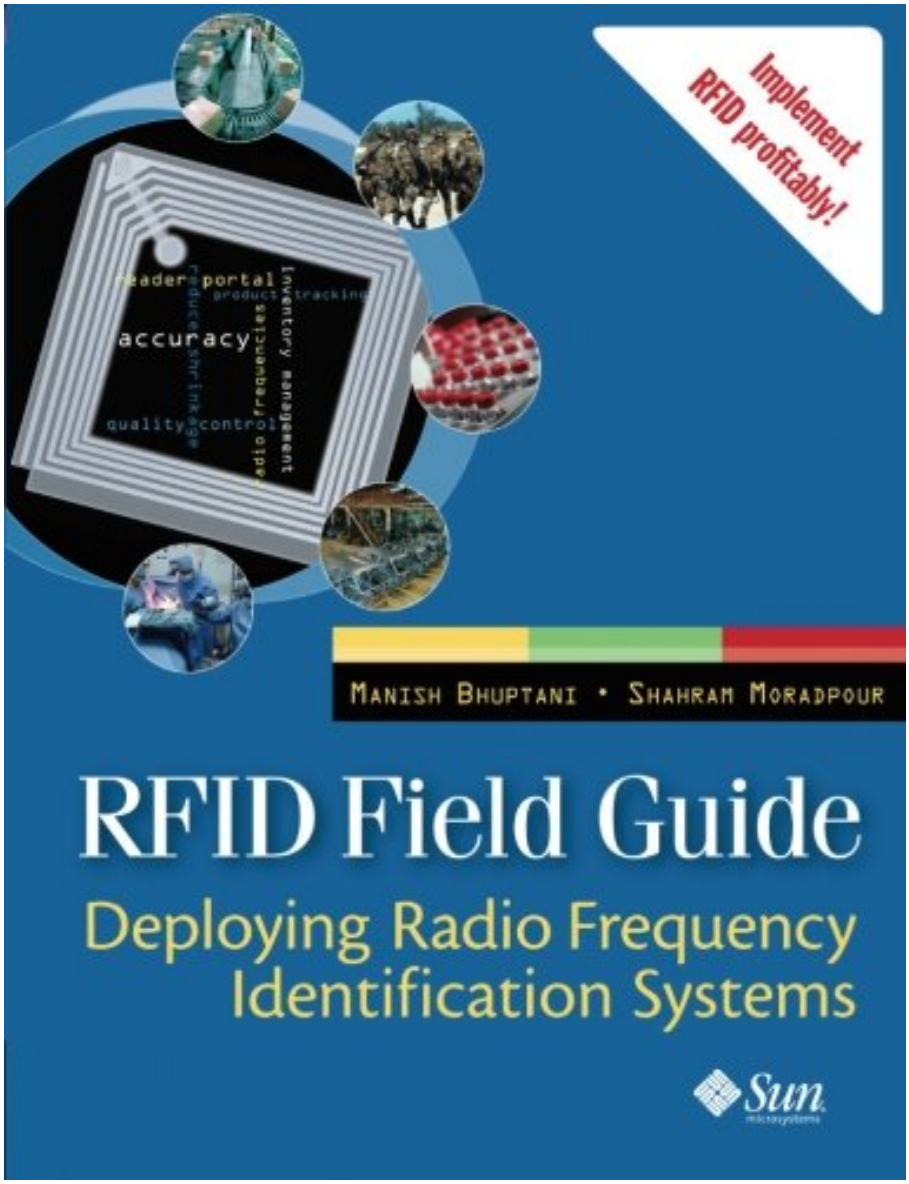
RFID FIELD GUIDE: DEPLOYING RADIO FREQUENCY IDENTIFICATION SYSTEMS BY MANISH BHUPTANI, SHAHRAM MORADPOUR





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From the Back Cover

The Practical RFID Deployment Guide

Whatever your industry or application, RFID Field Guide is your comprehensive guide to planning, designing, and deploying RFID technology into your business. Two leading RFID experts draw on their extensive experience to cut through the hype associated with RFID technology and present the realities: true costs and benefits, technical and organizational obstacles, and solutions that work.

The authors begin by explaining how RFID works, and identifying mature and emerging RFID applications that can reduce expenses, increase revenue, and drive competitive advantage. Next, they present a complete framework for assessing and deploying RFID: everything from budgeting to team building, standards to security, vendor selection to integration.

Along the way, they answer crucial questions facing every manager responsible for evaluating, planning, or implementing RFID:

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RFID tags will be found embedded in everything from cereal boxes to prescription medicines to parts of an aircraft, and a variety of other machinery. These tags, when in proximity of the right type of sensors, will broadcast information about the objects they are embedded in—dimensions, whereabouts, identification number, history of temperature they were exposed to, and many other static and dynamic characteristics. Many sensors located in hospitals, manufacturing plants, stores, or automobiles will collect this data, aggregate it, and route it to various humans—as well as decision-support systems.

The benefits derived from offering services based on such information will be tremendous. Businesses will run more efficiently and consumers will experience better and innovative services. For example, instead of a grocery store losing sales because of consumers not finding meat in stock, the RFID tags in the meat packages being bought will tell the store's in-house sensors that the shelves are more than half empty, triggering a re-order to the supplier. The supplier, armed with the latest information about the location of his meat shipments (thanks to RFID-based pallets used in trucks connected to the central facility via a GPS system) will direct the nearest available shipment to the store. As the truck carrying the goods is getting unloaded at the loading dock, the RFID tags in those boxes will alert the store's inventory system, which in turn will alert the stocking clerk to get ready to stock the shelves. The tags will also have the data about the

temperature the boxes were exposed to in transit. If the refrigeration system in the truck was not working properly, exposing some of the packages to higher than recommended temperature, the tags will help the store clerk identify and separate out packages containing spoiled goods. The time saved due to automatic detection of low stock levels and corresponding delivery means that the grocery store would not run out of meat—increasing profits. Detection of possibly spoiled goods means that the customers would not have to suffer the consequences, averting a potential health disaster and liability for the store.

That is the promise of RFID. But how much will ultimately prove out, and how much will be revealed as hype? How can a simple RFID tag make all this possible? What should you, the reader, be doing to embrace this phenomenon of an "RFID-enabled world"? How does this RFID technology work? What types of applications are possible and who is adopting the technology? What are the drivers and barriers to adoption? What is the next step for an organization trying to figure out how to proceed forward with an RFID deployment? We are sure many such questions have come to your mind by now.

These are the questions we hope to answer in this book. In our current roles, we get a bird's eye view of many new technologies and new applications of existing technologies. Our jobs as Market Developers for Sun Microsystems have exposed us to the latest software being developed at the tiniest software start-ups to the business and IT needs of the largest Fortune 500 companies. We have seen many technology innovations that were high on promise and low on substance. We have also met many vendors who flocked to capitalize on those innovations, only to fail, as there was no sizable revenue or business model. At the same time, we have met many customers who routinely use cutting-edge technology as a competitive weapon to strengthen their business.

As we worked with companies that promised to apply RFID to solve complex business problems and customers who looked at this technology to help them leapfrog the competition, we realized that some companies selling or implementing RFID haven't sufficiently addressed these questions—placing themselves and their customers at risk of failure. At the same time, some early adopters were gaining valuable insights and benefits from the deployment of this technology. We asked ourselves how a company looking at understanding and implementing this technology could make an informed decision and take action. This book should provide the answer.

This book is not a theoretical treatise on competitive advantage, although it does point out examples of how companies can gain competitive advantage from RFID deployments. Nor is it a technical manual providing code samples, although it does go into fairly detailed technical discussion of the fundamentals of RFID. This book is a field guide for the practitioner.

A practitioner could be a business person, a technical person or a person wearing both hats. It could be a senior executive trying to separate reality from the hype surrounding RFID and wondering if this technology can give him a leg up on the competition. Or, it could be a plant manager trying to figure out sourcing and production issues involved in applying RFID tags to an item in production. In this book, all of them will find real-life examples of RFID deployments, issues related to people, processes and technology, and tips for making an RFID deployment successful.

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Most helpful customer reviews

1 of 1 people found the following review helpful.
Thin on Technology, Thick on Assesment
By A Reader
I bought the book expecting it to be perfect for somebody who is in charge of deploying RFID technology. I found the first few chapters quite useful for this regard. However, the bulk of the book was focused on

analyzing the cost and benefits of introducing RFID in the first place, how to sell it to management, pilot programs, etc. This is excellent advice, but not very useful for somebody interested in the HOW TO deploy RFID. Overall, I was very disappointed with this book on the technical side, although it was an interesting read on the management side.

5 of 6 people found the following review helpful.
RFID Field Guide by Bhuptani & Moradpour
By Sam Hayes
RFID Field Guide provides a focused analysis and resources for those who seek to capitalize on RFID-derived business opportunities. It is not an RFID primer nor a theoretical treatise as much as a guide for those who must act today on RFID. Of the 3 sections (I: What is; II: How to Deploy; III: Path Ahead), this book is focused on the latter two issues. Having worked with both authors, I can hear their Java & Jini market development experience throughout this book. These are not techies who are fascinated by technology. Rather, Moradpour and Bhuptani believe that RFID will benefit the business processes of some companies more than others. This book stems from their significant experience with platforms, technology innovation cycles and managing ecosystems. In this respect, I found the book unique from other books answering the "big" RFID questions.

Two criticisms of the book include the surprisingly non-quantitative nature of Chapter 7: Cost-Benefit Analysis. I expected the financial analysis behind some RFID deployments or even some good projections on the Wal-Mart mandate (although the case studies in the appendix are good). And, second, the authors frequently plug a URL for more information ([...] I found the site disappointingly bare of updated data or even links to other good sources. Perhaps they will add to this site in the near future.

As for this coming from a Sun-Prentice Hall Press, the analysis has almost nothing to do with Sun's technology. That said, at Sun we often say that RFID will fill more databases and storage than any human-keyed application (think Web URL strings and navigation data for everything connected to the Net).

In sum, Bhuptani and Moradpour have provided a seasoned structural analysis that can be used to drive real-world RFID deployments as well as challenge practitioners to envision and prepare for an "RFID-enabled world."

6 of 7 people found the following review helpful.
Technology explained for effective and realistic application
By Stephen B. Sobhani
Having already begun to be a cutting edge technology that has proved itself effective in streamlining a broad and diverse array of supply-side resources in the private sector -- RFID will, no doubt, continue to expand and integrate itself into other sectors: How and when this occurs is a question of understanding the merits and true potential of this incredible technology.

This is a must-read for anyone who not only wants to understand RFID for what it is and what it could be in terms of application, but also for anyone who wants to see how effective the confluence of information age technology can be utilized to advance and improve pre-existing systems, services, and production mechanisms.

Bhuptani and Moradpour present RFID in a very accessible and easily-understood manner that appeals to a broad range of readers. From us laypersons who, quite frankly, might view RFID as a new opportunity for investment; to the many technophiles who are already tearing through this book to understand the many different nuances and future potential of this new technology; as well as any manager who is constantly looking to streamline the systems that he or she operates.

Believe the hype: RFID is the future and the RFID FIELD GUIDE not only provides a picture of it, it IS the map that can get you there.

See all 11 customer reviews...

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RFID Field Guide Preface

As the number of devices attached to the Network has grown exponentially, so has the value of the Network and the benefits of being attached to it. First, thousands of mainframes and mini computers shared business data. Then it was millions of PCs; then tens of millions of mobile phones and handhelds—spawning even more high-value networked services. Today shared applications and services are routine, but the revolution is just beginning. Soon, billions of devices—each with their own digital heartbeat—will connect to the Network. Many will utilize a single, powerful technology: Radio Frequency Identification (RFID).

RFID tags will be found embedded in everything from cereal boxes to prescription medicines to parts of an aircraft, and a variety of other machinery. These tags, when in proximity of the right type of sensors, will broadcast information about the objects they are embedded in—dimensions, whereabouts, identification number, history of temperature they were exposed to, and many other static and dynamic characteristics. Many sensors located in hospitals, manufacturing plants, stores, or automobiles will collect this data, aggregate it, and route it to various humans—as well as decision-support systems.

The benefits derived from offering services based on such information will be tremendous. Businesses will run more efficiently and consumers will experience better and innovative services. For example, instead of a grocery store losing sales because of consumers not finding meat in stock, the RFID tags in the meat packages being bought will tell the store's in-house sensors that the shelves are more than half empty, triggering a re-order to the supplier. The supplier, armed with the latest information about the location of his meat shipments (thanks to RFID-based pallets used in trucks connected to the central facility via a GPS system) will direct the nearest available shipment to the store. As the truck carrying the goods is getting unloaded at the loading dock, the RFID tags in those boxes will alert the store's inventory system, which in turn will alert the stocking clerk to get ready to stock the shelves. The tags will also have the data about the temperature the boxes were exposed to in transit. If the refrigeration system in the truck was not working properly, exposing some of the packages to higher than recommended temperature, the tags will help the store clerk identify and separate out packages containing spoiled goods. The time saved due to automatic

detection of low stock levels and corresponding delivery means that the grocery store would not run out of meat—increasing profits. Detection of possibly spoiled goods means that the customers would not have to suffer the consequences, averting a potential health disaster and liability for the store.

That is the promise of RFID. But how much will ultimately prove out, and how much will be revealed as hype? How can a simple RFID tag make all this possible? What should you, the reader, be doing to embrace this phenomenon of an "RFID-enabled world"? How does this RFID technology work? What types of applications are possible and who is adopting the technology? What are the drivers and barriers to adoption? What is the next step for an organization trying to figure out how to proceed forward with an RFID deployment? We are sure many such questions have come to your mind by now.

These are the questions we hope to answer in this book. In our current roles, we get a bird's eye view of many new technologies and new applications of existing technologies. Our jobs as Market Developers for Sun Microsystems have exposed us to the latest software being developed at the tiniest software start-ups to the business and IT needs of the largest Fortune 500 companies. We have seen many technology innovations that were high on promise and low on substance. We have also met many vendors who flocked to capitalize on those innovations, only to fail, as there was no sizable revenue or business model. At the same time, we have met many customers who routinely use cutting-edge technology as a competitive weapon to strengthen their business.

As we worked with companies that promised to apply RFID to solve complex business problems and customers who looked at this technology to help them leapfrog the competition, we realized that some companies selling or implementing RFID haven't sufficiently addressed these questions—placing themselves and their customers at risk of failure. At the same time, some early adopters were gaining valuable insights and benefits from the deployment of this technology. We asked ourselves how a company looking at understanding and implementing this technology could make an informed decision and take action. This book should provide the answer.

This book is not a theoretical treatise on competitive advantage, although it does point out examples of how companies can gain competitive advantage from RFID deployments. Nor is it a technical manual providing code samples, although it does go into fairly detailed technical discussion of the fundamentals of RFID. This book is a field guide for the practitioner.

A practitioner could be a business person, a technical person or a person wearing both hats. It could be a senior executive trying to separate reality from the hype surrounding RFID and wondering if this technology can give him a leg up on the competition. Or, it could be a plant manager trying to figure out sourcing and production issues involved in applying RFID tags to an item in production. In this book, all of them will find real-life examples of RFID deployments, issues related to people, processes and technology, and tips for making an RFID deployment successful.

The book is organized into three sections. The first section explains RFID technology by providing its history, its components, and a perspective on what it could do for you. Since no technology can succeed and proliferate unless it helps businesses meet one or more of their primary economic needs—reducing cost, increasing revenue, and providing competitive advantages, we also provide some examples of RFID usage and its benefits to businesses and end users in this section.

The second section explains how you can leverage RFID in your organization. RFID standards, an RFID analysis and deployment framework, cost-benefit considerations and RFID vendor landscape are explained here. It outlines a holistic approach to doing an RFID project that can harness this complex technology for achieving real business benefits. Although one might think that putting an RFID tag on a box is not a

complex task (which, by the way is true—it takes only 10 seconds for an assembly worker to put a tag on a box and pass it along, an activity known as "slap-n-ship"), unless that process has been thought through, you are not likely to see a lot of benefits from tagging an item. The challenge is not in applying the tag to an item, but in re-thinking existing business processes or creating new ones to fully leverage the powerful, real-time data collection capability offered by RFID. The RFID also brings with it a new set of challenges. For example, how to process all the data generated by billions of tags in the supply chain; how to filter the processed data; and how to integrate the filtered data into existing systems and processes to increase benefits. The framework and tools we provide in the second section help you think through such issues pertinent to your environment.

The third section looks at the path ahead of us. It explains how external factors, such as mandates, legislation, regulations, political interest, and consumer concerns (such as security and privacy) can affect a technology's proliferation. It also provides a high level view of the trends surrounding RFID deployment—from trends in tag design to invention of new business models.

The book is designed to cater to various types of practitioners. Some may be interested in reading the entire book first to get a comprehensive understanding the technology. Others may simply want an answer to their specific questions. To balance the needs of both types of readers, we have put in a section at the beginning of each chapter titled "Five Questions You can Expect to Get Answered in This Chapter." Advanced readers will find these questions quite useful in determining the type of information covered in the rest of the chapter. For example, if you want to find out about the different types of tags and the frequencies they operate at? Turn to Chapter 3. Confused about RFID standards between U.S., Europe, and China? Turn to Chapter 4 for clarification. Want to educate your CFO on why he should care about RFID? Turn to Chapter 7 for discussion of short-term and long-term benefits of RFID, and advice on developing a cost-benefit analysis. Want to learn about the emerging trends in RFID? You will like the discussion in Chapter 11.

We hope that you walk away from this book with a better appreciation for the technology as well as a practical understanding of how to make RFID work in your business.

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