

Preface

ABOUT THIS BOOK

Event processing is an emerging area, the appearance in recent years of various commercial products and open source offerings, making it the fastest growing segment of enterprise middleware. While interest in this subject is growing, gaining a deep understanding of event processing is still a challenge. As it is a relatively new area it is not surprising that several different approaches to event processing have been evolving in parallel. This means that when trying to understand what event processing is about it can be difficult to see the wood from the trees. This is the main intention of this book, to give a deep dive into what event processing is (the wood) and to provide the reader an opportunity to experience this using some of the existing event processing languages or tools (the trees).

This book is intended for those interested in understanding what's behind event processing technologies and how they should be employed to design and implement applications. This book is the first comprehensive view about event processing for the technical reader, it looks at "event processing" as a generic technology, in a way that fits all the different implementation approaches, and thus familiarizes the reader with the entire wood, and not just with a specific tree. The book provides a deep dive into all the concepts that need to be understood in order to design event processing applications, and guides the reader through these concepts by showing the construction of a single example application that uses event processing.

The interested reader also gets a unique opportunity to see how to implement this application using representatives of the various programming styles that exist today: SQL extension, rule based, graphical oriented, and script oriented languages. The website that accompanies the book provides examples based on this application, with instructions on how to download trial versions of various commercial and open source event processing products. This allows the reader to see the concepts applied in action, to play further with the code, and to devise further examples.

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Besides the design concepts the book also discusses implementation issues and the authors' opinion about the event processing of the future. A survey of existing products is provided, as well as a comprehensive set of terminology definitions.

THE INTENEDED READERSHIP

The book is intended for those who want to gain understanding about event processing concepts in depth; the primary audience is a technical audience consisting of architects, designers, developers and students. The book will benefit designers and architects who wish to know how to design applications that use event processing, and developers who would like to understand the relationships between these concepts and current event processing languages and products. It can also serve as a textbook for an academic or professional course on event processing, and for this reason it provides an "additional reading" list along with a few exercises at the end of each chapter.

THE BOOK'S METHODOLOGY

In this book we have taken a top-down approach by describing the concepts (the wood), and then providing the reader an opportunity to view the trees (representatives of the different approaches) and experiment with them through the associated Website. This approach is somewhat different from the bottom-up approach of describing a single language or product. We have taken this approach as there are several different approaches for implementing event processing applications, and the transfer in thinking from one to another is not easy. We use a general model that consists of seven building blocks, which we believe is an effective way to explain the concepts and facilities of event processing. Moreover, we feel that there are advantages in using this level of abstraction when designing and developing applications.

In order to illustrate these concepts we use a single example which we follow throughout the course of the book. This example, based around flower delivery, can be understood with no prior domain knowledge, but nevertheless contains many of the concepts that we discuss in the book.

Terminology does vary somewhat between different event processing products, so in this book we have tried to define all the terms and concepts that we use, and we provide a summary of these definitions in Appendix A. Our definitions are written in an explanatory style rather than in a rigorously formal style, so as to make them accessible to a broad audience. Where possible we are using definitions that are consistent with the terminology established by the Event Processing Technical Society (EPTS) however, our scope of terms is much larger.

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THE BOOK STRUCTURE

The book has four parts. The first part consists of chapter 1 and chapter 2 and is an introduction to the subject and to the terms and concepts that we are using. Readers who are already familiar with Event Processing can just browse through it, noting the definitions we use, without reading it thoroughly.

- Chapter 1 is the entry point, with some examples and some basic terms, and introduces the Fast Flower Delivery example.
- Chapter 2 explains basic architectural and programming principles.

The second part of the book goes through the concepts in detail, showing how the seven building blocks can be used to describe an event processing application, illustrating them in the context of the Fast Flower Delivery example.

- Chapter 3 deals with events: types, event schema descriptions, event relationships.
- Chapter 4 deals with event producers: types of event producers, ways events are obtained from a producer.
- Chapter 5 deals with event consumers: types of event consumers, and some current examples.
- Chapter 6 deals with the event processing network, a key concept in event processing and with the associated building blocks, such as: event processing agents, channels and global state.
- Chapter 7 discusses the notion of context and its major role in event processing.
- Chapter 8 looks in greater detail at event processing agents that filter and transform events.
- Chapter 9 provides a deeper dive into "event pattern matching", this being the jewel in the crown of event processing.

The third part deals with additional issues that relate to the implementation of event processing applications in practice.

- Chapter 10 provides a survey of implementation oriented issues, both engineering aspects such as scalability, and software engineering aspects such as programming style and development tools.
- Chapter 11 surveys some of the semantic challenges that developers and users of event processing systems should be aware of, in order to avoid semantic anomalies when building event processing applications.

The fourth part, consisting of chapter 12, summarizes the book and provides the author's views about the future of event processing.

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TOPICS FOR ADDITIONAL READING

Some topics are mentioned in the book, but are not thoroughly discussed, since such discussion is not vital to achieve to book's goals, and they are the subject of books in their own right.

Business topics, (such as: a review of the types of applications being used, or analysis of the event processing market and its trends) are beyond the scope of the book. The book provides short motivation for the use of Event Processing by means of some examples in chapter 1, and talks about trends in chapter 12. It provides an additional reading list for the readers interested to go deeper here.

There are many technologies and architectural concepts that are adjacent to event processing, starting from SOA (Service Oriented Architecture), moving through EIP (Enterprise Integration Patterns), and touching other disciplines: BPM (Business Process Management), BI (Business Intelligence), BAM (Business Activity Monitoring) and more. In chapter 2, we provide a brief survey of the relationship of event processing to each of these areas and then provide an additional reading list for the interested reader.

THE EPIA WEBSITE

The book's Website is being hosted by EPTS,
<http://www.ep-ts.com/content/view/74/108/>

This Website contains the solution of the "Fast Flower Delivery" example that accompanies this book in six different event processing languages representing six different programming styles. Some code samples from these solutions are embedded inside the book, but if you wish to learn a specific language you should download the documentation from the appropriate link on the Website. There is also a link to the editor that will enable you to create a model of this system using the building block language described in this book.

Comments to the reviewers:

This Website is currently still under construction (will be finalized by the end of January 2010), some of the solutions are already there, and some are being checked. The solutions will be validated by that time.

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