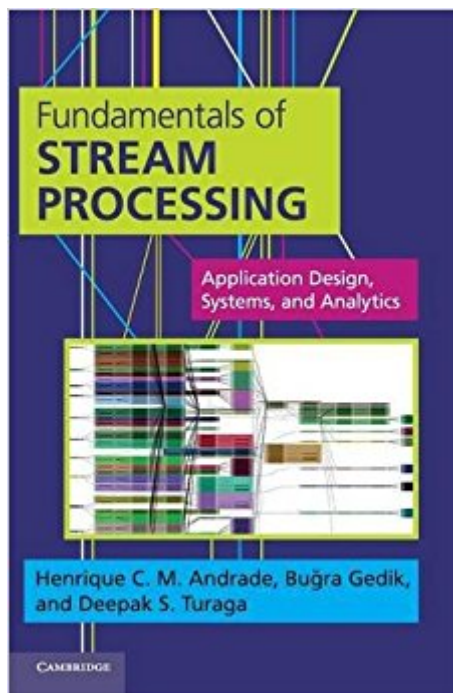


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# Fundamentals Of Stream Processing: Application Design, Systems, And Analytics



## Synopsis

Stream processing is a novel distributed computing paradigm that supports the gathering, processing, and analysis of high-volume, heterogeneous, continuous data streams, to extract insights and actionable results in real time. This comprehensive, hands-on guide combining the fundamental building blocks and emerging research in stream processing is ideal for application designers, system builders, analytic developers, as well as students and researchers in the field. This book introduces the key components of the stream computing paradigm, including the distributed system infrastructure, the programming model, design patterns, and streaming analytics. The explanation of the underlying theoretical principles, illustrative examples and implementations using the IBM InfoSphere Streams SPL language, and real-world case studies provide students and practitioners with a comprehensive understanding of such applications and the middleware that supports them.

## Book Information

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## Customer Reviews

This book teaches fundamentals of the stream processing paradigm that addresses performance, scalability, and usability challenges in extracting insights from massive amounts of live, streaming data. It presents core principles behind application design, system infrastructure, and analytics, coupled with real-world examples for a comprehensive understanding of the stream processing area.

An excellent book for understanding streaming analytics applications. Covers a wide spectrum of views from historical background, current commercial solutions, system architecture considerations and core analytics implementation, all with a focus on realtime inline data analytics processing. The scope of the book is very wide but at the same time there are many detailed examples. Cannot recommend too highly.

Internet of things, cloud and mobile are the major drivers for stream processing. Use cases are network monitoring, intelligent surveillance, but also less technical things such as inventory management or fraud detection. The book helps a lot to get a basic understanding about history, concepts and patterns of the stream processing paradigm.

**CONTENT**

The book starts with an introduction to stream processing explaining the motivation and need for this paradigm. Part 1 (Fundamentals) contains my favorite chapters of this book as you get a lot of knowledge about stream processing and why different academic and commercial projects and products emerged for stream processing. It explains how they differ. The end of part 1 gives an overview about academic systems such as TelegraphCQ, STREAM, Aurora and Borealis. Afterwards, commercial systems such as TIBCO BusinessEvents and Oracle CEP are discussed, before switching over to stream processing frameworks and products: IBM InfoSphere Streams and TIBCO StreamBase as proprietary alternatives, and Twitter Storm (now Apache Storm) and Yahoo S4 as open source options.

Part 2 (application development – data flow programming) discusses some basic concepts of stream processing such as flow composition (static, dynamic, nested), flow manipulation (operators, punctuations, windowing), modularity and extensibility. Part 3 discusses the architecture of a stream processing system and its applications. Part 4 goes into more detail discussing design principles and patterns for functional / non-functional topics and data processing / transformation. Part 5 describes three use cases from different verticals (general operations monitoring, healthcare and semiconductor).

Altogether, you get a good overview about the stream processing paradigm, including history, basic concepts, design principles and use cases.

**VERY IBM-BIASED**

The book has a lot of great content. However, you should be aware that it is focused on IBM InfoSphere Streams and its programming language SPL. All screenshots and code examples (and there are a lot!) use these. That is absolutely legitimate as the authors were involved in creating this product / this language respectively its academic ancestors. If you want to or have to use another programming language, framework (such as Apache Storm) or product (such as TIBCO StreamBase), you can skip several parts of this book (all code examples; chapter about

IBM InfoSphere Streams architecture; implementation of use cases; etc). Also, you should keep this in mind when reading the first part of the book, which compares different products. Nevertheless, the book is still worthy reading as you learn a lot about stream processing concepts in general.

**CRITICISM** There is only a few things to criticize. What I did not like: The book is written in a very academic style. When I wrote my degree dissertation, I had to use the same style. Not suited for a business book, in my opinion. The price for the book is very high (100 USD / 80 Euro). The book has over 500 pages, but a lot of it is source code, which is not needed or read by most readers, probably. If you want to / have to learn IBM InfoSphere Streams, you will probably do a training session with IBM coaches instead of trying to learn with this book (I doubt this would work as this is no training book). On the other side, if you will use another product instead of IBM's, then you also do not care about the source code.

**CONCLUSION** This book is not good for evaluation of different products as it is very IBM-biased. Nevertheless I really enjoyed reading the chapters about history, concepts and design patterns. I learned a lot about stream processing in general. As you do not have many options, if you want to buy a book about stream processing, my recommendation is to buy this one, even if you do not care about IBM's product, but want to use another one such as TIBCO StreamBase.

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