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Edward Curry

Real-time Linked Dataspaces

Enabling Data Ecosystems for Intelligent Systems

- **Open Access**
- **Establishes the theoretical foundations and principles of real-time linked dataspaces as a data platform for intelligent systems**
- **Introduces specialized best-effort techniques and models to enable incremental semantic integration for managing and processing data streams**
- **Explores the use of real-time linked dataspaces within real-world smart environments**

This open access book explores the dataspace paradigm as a best-effort approach to data management within data ecosystems. It establishes the theoretical foundations and principles of real-time linked dataspaces as a data platform for intelligent systems. The book introduces a set of specialized best-effort techniques and models to enable loose administrative proximity and semantic integration for managing and processing events and streams. The book is divided into five major parts: Part I "Fundamentals and Concepts" details the motivation behind and core concepts of real-time linked dataspaces, and establishes the need to evolve data management techniques in order to meet the challenges of enabling data ecosystems for intelligent systems within smart environments. Further, it explains the fundamental concepts of dataspaces and the need for specialization in the processing of dynamic real-time data. Part II "Data Support Services" explores the design and evaluation of critical services, including catalog, entity management, query and search, data service discovery, and human-in-the-loop. In turn, Part III "Stream and Event Processing Services" addresses the design and evaluation of the specialized techniques created for real-time support services including complex event processing, event service composition, stream dissemination, stream matching, and approximate semantic matching. Part IV "Intelligent Systems and Applications" explores the use of real-time linked dataspaces within real-world smart environments. In closing, Part V "Future Directions" outlines future research challenges for dataspaces, data ecosystems, and intelligent systems. Readers will gain a detailed understanding of how the dataspace paradigm is now being used to enable data ecosystems for intelligent systems within smart environments.

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