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Sommario/riassunto	This book summarizes the results of solving the two issues from a 5-year national project in Japan, called Bidirectional Information Systems for Collaborative, Updatable, Interoperable, and Trusted Sharing (BISCUITS) since 2017, with researchers from the National Institute of Informatics, Osaka University, Kyoto University, Nanzan University, Hosei University, Tohoku University, and University of Tokyo. It provides a big picture of the research results, insights, and the new perspectives achieved during the project, paving the way for future further investigation. Along with the continuous evolution of data management systems for the new market requirements, we are moving from centralized systems, which had often led to vast and monolithic databases, toward decentralized systems, where data are maintained in different sites with autonomous storage and computation capabilities.

A common practice is the collaboration or acquisition of companies: there is a large demand for different systems to be connected to provide valuable services to users, yet each company has its own goal and often builds its own applications and database systems independently without federating with others. As a result, we need to construct a decentralized system by integrating the independently built databases through schema matching, data transformation, and update propagation from one database to another. There are two fundamental issues with such decentralized systems, local privacy and global consistency. By local privacy, the owner of the data stored on a site may wish to control and share data by deciding what information should be exposed and how its information should be used and updated by other systems. By global consistency, the systems may wish to have a globally consistent view of all data, integrate data from different sites, perform analysis through queries, and update the integrated data.
