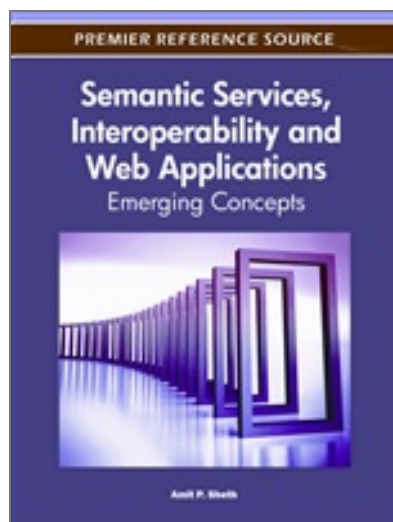IGI Global
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Linked Data: The Story so Far

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Abstract

The term â€œLinked Dataâ€ refers to a set of best practices for publishing and connecting structured data on the Web. These best practices have been adopted by an increasing number of data providers over the last three years, leading to the creation of a global data space containing billions of assertionsâ€" the Web of Data. In this article, the authors present the concept and technical principles of Linked Data, and situate these within the broader context of related technological developments. They describe progress to date in publishing Linked Data on the Web, review applications that have been developed to exploit the Web of Data, and map out a research agenda for the Linked Data community as it moves forward.

Chapter Preview

Introduction

The World Wide Web has radically altered the way we share knowledge by lowering the barrier to publishing and accessing documents as part of a global information space. Hypertext links allow users to traverse this information space using Web browsers, while search engines index the documents and analyse the structure of links between them to infer potential relevance to users' search queries (Brin & Page, 1998). This functionality has been enabled by the generic, open and extensible nature of the Web (Jacobs & Walsh, 2004), which is also seen as a key feature in the Web's unconstrained growth.

Despite the inarguable benefits the Web provides, until recently the same principles that enabled the Web of documents to flourish have not been applied to data. Traditionally, data published on the Web has been made available as raw dumps in formats such as CSV or XML, or marked up as HTML tables, sacrificing much of its structure and semantics. In the conventional hypertext Web, the nature of the relationship between two linked documents is implicit, as HTML is not sufficiently expressive to enable individual entities described in a particular document to be connected by typed links to related entities.

However, in recent years the Web has evolved from a global information space of linked documents to one

where both documents and data are linked. Underpinning this evolution is a set of best practices for publishing and connecting structured data on the Web known as Linked Data. The adoption of the Linked Data best practices has lead to the extension of the Web with a global data space connecting data from diverse domains such as people, companies, books, scientific publications, films, music, television and radio programmes, genes, proteins, drugs and clinical trials, online communities, statistical and scientific data, and reviews. This Web of Data enables new types of applications. There are generic Linked Data browsers which allow users to start browsing in one data source and then navigate along links into related data sources. There are Linked Data search engines that crawl the Web of Data by following links between data sources and provide expressive query capabilities over aggregated data, similar to how a local database is queried today. The Web of Data also opens up new possibilities for domain-specific applications. Unlike Web 2.0 mashups which work against a fixed set of data sources, Linked Data applications operate on top of an unbound, global data space. This enables them to deliver more complete answers as new data sources appear on the Web.

The remainder of this article is structured as follows. In Section 2 we provide an overview of the key features of Linked Data. Section 3 describes the activities and outputs of the Linking Open Data project, a community effort to apply the Linked Data principles to data published under open licenses. The state of the art in publishing Linked Data is reviewed in Section 4, while Section 5 gives an overview of Linked Data applications. Section 6 compares Linked Data to other technologies for publishing structured data on the Web, before we discuss ongoing research challenges in Section 7.
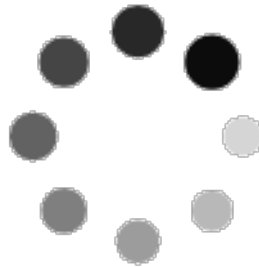
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