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Enhancing Usability in Linked Data Editing in Web Applications

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Editing Linked Data documents represents an enormous challenge to users with limited technical expertise. These users struggle with language rules, relationships between entities, and interconnected concepts. These issues can result in frustration and low data quality. In order to respond to this challenge, we introduce a new editor, designed to facilitate effortless editing of JSON-LD documents, catering to both newcomers and advanced users. It is made for easy and seamless integration into other web-based applications and can be used similar to an HTML tag.

The complexity of Linked Data arises from its graph-like structure, where entities are connected through relationships, forming a complex web of semantic connections. While this is advantageous for data integration and cross-platform compatibility, this effort presents significant barriers for those not well-versed in technical aspects. Even with the rise of user-friendly interfaces, manually modifying JSON-LD documents can lead to mistakes in structure and unintended disruptions to valuable linkages.

Our proposed solution is a reusable web component based on modern browser technologies. It offers a view on the data which is easier to perceive than typical graph visualizations. This view shows the data as a list of named entities and their properties to simplify the visual complexity, without giving up on the conceptual graph structure. The list view brings the conceptual entities to the front, but still supports more technical structure elements like blank nodes, as they still exist as properties.

Using schema.org's machine-readable definitions, the editor understands how entities may or may not be connected. This is used to offer autocomplete functionality and avoid the invalid use of the schema.org vocabulary. This functionality can be extended using the integrated schema loader concept.

From a technical point of view, the web component is an HTML Element which takes a (possibly empty) JSON-LD document. It then provides the modified document as a callback as soon as the user saves the document from within the editor. It is therefore easily integrable into existing projects based on arbitrary web frameworks and does not require any special interface implementations. The component is based on StencilJS, which allows generating wrappers for popular frameworks, for tighter integration.

In conclusion, our web component empowers both new and experienced users to edit Linked Data seamlessly, overcoming the inherent challenges associated with manual JSON-LD modification. By simplifying the view on the graph structure and providing an intuitive and supporting interface, the component enhances the ease of use and accessibility of Linked Data editing. This holds significant potential for expediting data curation, collaboration, and integration, thus fostering a more inclusive and dynamic Linked Data ecosystem.

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