Paper Summary

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Title: SmartReviews: Towards Human- and Machine-Actionable Representation of Review Articles

Authors: Allard Oelen, Markus Stocker, Sören Auer

DOI: https://doi.org/10.1007/978-3-030-91669-5_9

Year: 2021

Publication Type: Conference

Discipline/Domain: Information Science / Digital Libraries

Subdomain/Topic: Semantic Publishing, Scholarly Knowledge Graphs, Review Article Authoring

Eligibility: Eligible

Overall Relevance Score: 90

Operationalization Score: 95

Contains Definition of Actionability: Yes (implicit via functional characteristics)

Contains Systematic Features/Dimensions: Yes

Contains Explainability: Partial

Contains Interpretability: Partial

Contains Framework/Model: Yes

Operationalization Present: Yes

Primary Methodology: Conceptual with Implementation and Use Case Demonstration

Study Context: Scholarly review article authoring and publishing

Geographic/Institutional Context: L3S Research Center & TIB Leibniz Information Centre, Germany

Target Users/Stakeholders: Academic authors, publishers, research communities, digital library develope

Primary Contribution Type: Conceptual framework and software tool implementation

CL: Yes

CR: Yes

FE: Yes

TI: Partial

EX: Partial

GA: Yes

Reason if Not Eligible: n/a

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SmartReviews: Towards Human- and Machine-Actionable Representation of Review Articles

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Discipline/Domain:

Information Science / Digital Libraries

Subdomain/Topic:

Semantic Publishing, Scholarly Knowledge Graphs, Review Article Authoring

Contextual Background:

The paper addresses limitations in traditional scholarly review articles—lack of updates, low collaboration

Geographic/Institutional Context:

L3S Research Center & TIB Leibniz Information Centre for Science and Technology, Hannover, Germany

Target Users/Stakeholders:

Academic authors, publishers, research communities, and developers of digital library infrastructure

Primary Methodology:

Conceptual framework, technical implementation, and demonstration via a use case

Primary Contribution Type:

Conceptual model, operational framework, and software tool

General Summary of the Paper

This paper presents *SmartReviews*, a new authoring and publishing framework for scholarly review arti

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Eligibility

Eligible for inclusion: **Yes**

How Actionability is Understood

Actionability here is framed in terms of both *human* and *machine* use: a review is actionable if it can b

> “The key limitation is the inability of machines to access and process knowledge presented within revie

> “The use of these technologies improves the machine-actionability of data and provides a means to ma

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What Makes Something Actionable

- **Updatable** (living document concept with version control)
- **Collaboratively authored** (community-based contributions with provenance tracking)
- **Structured & semantic representation** (linked data, ontologies, RDF)
- **Accessible** (HTML format, WCAG compliance)
- **Interoperable** (machine-readable formats, FAIR data principles)
- **Contextually linked** (properties tied to ontologies to enhance interpretability)

How Actionability is Achieved / Operationalized

- **Framework/Approach Name(s):** SmartReviews within ORKG
- **Methods/Levers:** Use of RDF, ontologies (DOCO, Fabio, DEO), semantic comparison tables, living d
- **Operational Steps / Workflow:**
  1. Create sections (text, comparisons, visualizations, ontology tables, resource/property tables)
  2. Populate with structured, linked data from ORKG
  3. Maintain head version with version history for updates
  4. Enable collaborative editing and attribution via acknowledgements
- **Data & Measures:** RDF triples, SPARQL queries for retrieval, ontology-linked properties
- **Implementation Context:** Digital library / semantic publishing infrastructure

> “Comparison sections form the core of each review article.” (p. 108)

> “The data itself can be accessed via… SPARQL endpoint, RDF dump, and REST interface.” (p. 110)

Dimensions and Attributes of Actionability (Authors’ Perspective)

- **CL (Clarity):** Yes – clear structured representation via tables/visuals
- **CR (Contextual Relevance):** Yes – ontology linking ensures contextual meaning
- **FE (Feasibility):** Yes – enabled by ORKG platform and existing ontologies
- **TI (Timeliness):** Partial – supports updates but depends on community activity
- **EX (Explainability):** Partial – ontology tables explain properties but not all content
- **GA (Goal Alignment):** Yes – aligns with FAIR principles and open science goals
- **Other Dimensions Named by Authors:** Accessibility, Collaboration, Coverage

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Theoretical or Conceptual Foundations

- Living documents concept (Shanahan 2015)
- Semantic Web and Linked Data principles (Berners-Lee et al., RDF, SPARQL)
- FAIR data principles (Wilkinson et al., 2016)

Indicators or Metrics for Actionability

- Ability to execute SPARQL queries over review content
- Presence of ontology-linked properties
- Version history and update frequency
- Accessibility compliance (HTML, WCAG)

Barriers and Enablers to Actionability

- **Barriers:** Researcher habits, resistance to change, lack of incentives for ongoing updates
- **Enablers:** Collaborative platform, attribution system, FAIR data standards, semantic web technologie

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Relation to Existing Literature

The authors situate their approach within semantic publishing research, citing prior calls for machine-read

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Summary

The paper conceptualizes actionability in scholarly reviews as a combination of dynamic updatability, sem

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Scores

- **Overall Relevance Score:** 90 — Strong, detailed implicit definition of actionability with explicit dimens
- **Operationalization Score:** 95 — Full technical and procedural workflow for achieving actionability is p

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Supporting Quotes from the Paper

- “The key limitation is the inability of machines to access and process knowledge presented within review
- “Comparison sections form the core of each review article.” (p. 108)
- “The data itself can be accessed via… SPARQL endpoint, RDF dump, and REST interface.” (p. 110)
- “The use of these technologies improves the machine-actionability of data and provides a means to mak

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Actionability References to Other Papers

- Shanahan (2015) — Living documents concept
- Berners-Lee et al. (2001) — Semantic Web and Linked Data
- Wilkinson et al. (2016) — FAIR data principles
- Garcia-Castro et al. (2010) — Semantic living documents in life sciences