

## KMIS 2024 - Paper #76

**Paper Title:** *DT-Master: An Ontology to Support Provenance Capturing of Global Software Development Processes*

**Reviewer #1**

**General Assessment (Please assign scores using the following criteria (1=weakest; 6=strongest))**

Relevance (Paper fits one or more of the topic areas?): 5  
Originality (Newness of the ideas expressed): 2  
Technical Quality (Theoretical soundness/methodology): 2  
Significance (Is the problem worth the given attention?): 2  
Presentation (Structure/Length/English): 3  
Overall Rating (Weighted value of above items): 2

**Improvement Suggestions (for authors to consider in the camera-ready version. Additional detail in "Observations" )**

Abstract and Introduction are adequate? Yes  
Needs more experimental results? No  
Needs comparative evaluation? No  
Improve critical discussion ? (validation): Yes  
Figures are adequate ? (in number and quality): No  
Conclusions/Future Work are convincing? No  
References are up-to-date and appropriate? No  
Paper formatting needs adjustment? No  
Improve English? No

**Detailed comments to authors, including aspects that must be improved in the camera-ready version of the paper:**

In this work, the authors present an ontology named DT–Master that represent project management and software provenance–related processes. DT–Master has been built as the combination of two other ontologies: the DKDOnto, focused on storing information related to a project, and PROV–SwProcess, which captures provenance data from software processes.

Since the objective of the paper is the construction of an ontology, I would have expected to find a complete description of the construction steps following a specific ontology development methodology (e.g., Methontology, Ontology Development 101, etc.). In the context of such methodologies, it is common to find among the first stages one in which the domain and the pursued scope of the ontology must be clearly described, providing answers to questions such as the following: What is the domain that the ontology will cover? For what we are going to use the ontology? For what types of questions the information in the ontology should provide answers (a.k.a., competency questions)? Who will use and maintain the ontology? Only after such preliminary phase has been conducted, ontology engineers can consider reusing existing ontologies. In addition, the reuse of existing ontologies should also follow a dedicated process in which a thorough search and analysis helps to determine which ontologies come closest to the desired scope (why DKDOnto and PROV–SwProcess and not other ontologies?). All of these relevant details have been omitted from the paper, which casts doubt on its validity. In particular, why is the use of ontologies to represent

this information being considered at all, rather than any other conceptual model?

Some minor issues:

- "a formal and explicit specification of a shared conceptualization" is often attributed to [https://doi.org/10.1016/S0169-023X\(97\)00056-6](https://doi.org/10.1016/S0169-023X(97)00056-6)
- Check: "system development(b10, )."
- Fig.1 is one part of the conceptual model of the PROV-SwProcess (not 'example of the provenance')
- Check: "as an example. Its ontology defines that 'all vehicles have 4 wheels'"
- "For class equivalence we analyze the definitions of each class": this is part of the content in section 5 but seems more related to the definition of Table 1 and is better suited to such section.
- – Where is the first reference ("Guia facetado de ") cited?

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**Reviewer #2**

**General Assessment (Please assign scores using the following criteria (1=weakest; 6=strongest))**

Relevance (Paper fits one or more of the topic areas?): 5

Originality (Newness of the ideas expressed): 4

Technical Quality (Theoretical soundness/methodology): 3

Significance (Is the problem worth the given attention?): 3

Presentation (Structure/Length/English): 4

Overall Rating (Weighted value of above items): 4

**Improvement Suggestions (for authors to consider in the camera-ready version. Additional detail in "Observations" )**

Abstract and Introduction are adequate? Yes

Needs more experimental results? No

Needs comparative evaluation? No

Improve critical discussion ? (validation): No

Figures are adequate ? (in number and quality): No

Conclusions/Future Work are convincing? Yes

References are up-to-date and appropriate? Yes

Paper formatting needs adjustment? No

Improve English? Yes

**Detailed comments to authors, including aspects that must be improved in the camera-ready version of the paper:**

- Figure 1 is copy + paste from <http://www.gabriellacastro.com.br/provswprocess/v3.html> and therefore not needed. The text should refer to it.
- Figure 2 is copy + paste from the cited paper and therefore not needed. The text should refer to it.

typo: befollowed

## KMIS 2024 - Paper #76

**Paper Title:** *DT-Master: An Ontology to Support Provenance Capturing of Global Software Development Processes*

**Reviewer #3**

**General Assessment (Please assign scores using the following criteria (1=weakest; 6=strongest))**

Relevance (Paper fits one or more of the topic areas?): 5  
Originality (Newness of the ideas expressed): 3  
Technical Quality (Theoretical soundness/methodology): 4  
Significance (Is the problem worth the given attention?): 4  
Presentation (Structure/Length/English): 4  
Overall Rating (Weighted value of above items): 4

**Improvement Suggestions (for authors to consider in the camera-ready version. Additional detail in "Observations" )**

Abstract and Introduction are adequate? Yes  
Needs more experimental results? No  
Needs comparative evaluation? Yes  
Improve critical discussion ? (validation): Yes  
Figures are adequate ? (in number and quality): Yes  
Conclusions/Future Work are convincing? Yes  
References are up-to-date and appropriate? Yes  
Paper formatting needs adjustment? No  
Improve English? No

**Detailed comments to authors, including aspects that must be improved in the camera-ready version of the paper:**

This paper introduces an ontology to support Provenance Capturing of Global Software Development Processes.  
This ontology has been obtained through the merging of two already existing ontologies.  
The merging process is clear and well documented and the resulting ontology has been tested on examples.  
Some discussions on the complexity of the resulting ontology could have been interesting (108 classes and 121 object properties)  
Moreover, it is not clear how the ontology will be used, what are usage scenario?

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**Paper Title:** *DT-Master: An Ontology to Support Provenance Capturing of Global Software Development Processes*

**Reviewer #4**

**General Assessment (Please assign scores using the following criteria (1=weakest; 6=strongest))**

Relevance (Paper fits one or more of the topic areas?): 5  
Originality (Newness of the ideas expressed): 4  
Technical Quality (Theoretical soundness/methodology): 5  
Significance (Is the problem worth the given attention?): 5  
Presentation (Structure/Length/English): 2  
Overall Rating (Weighted value of above items): 4

**Improvement Suggestions (for authors to consider in the camera-ready version. Additional detail in "Observations" )**

Abstract and Introduction are adequate? Yes  
Needs more experimental results? No  
Needs comparative evaluation? No  
Improve critical discussion ? (validation): Yes  
Figures are adequate ? (in number and quality): No  
Conclusions/Future Work are convincing? No  
References are up-to-date and appropriate? Yes  
Paper formatting needs adjustment? Yes  
Improve English? Yes

**Detailed comments to authors, including aspects that must be improved in the camera-ready version of the paper:**

The article DT–Master: An Ontology to Support Provenance Capturing of Global Software Development Processes proposes an ontology that aims to provide a shared model to specify provenance data in the context of Global Software Development processes. The ontology results from the integration of two pre–existing ontologies with complementary foci. More specifically, the PROV–SwProcess ontology focuses on software development process provenance data, while the DKDOnto ontology models information related to software projects. The authors clearly describe the method steps applied to merge the two distinct ontologies.

Finally, the ontology is evaluated by instantiating an example use case, and conclusions are given.

Overall, the article makes a relevant contribution to the state–of–the–art, and addresses a significant problem. Furthermore, the methodology adopted is rigorous and sound, and the presentation of the article is sufficiently clear.

Still, the paper presents some weaknesses, which I report below, with suggestions for improvement.

While the problem addressed by the article is clearly defined, and the gap in literature is identified, the authors don't explicitly state the research questions the article answers, which would be beneficial to increase readability.

The description of the example use case adopted for the evaluation of the ontology could be expanded by including additional details and clearer descriptions.

In Figure 4 the image text is not readable. I recommend reformatting the figure, and/or breaking it into different views.

The captions of Figures 4–7 should be more informative.

The discussion of the results should be expanded and compared with the state-of-the-art. Moreover, the authors should consider expanding the Conclusions section by describing in more detail the limitations of the research and the directions for future work. In particular, we recommend considering improving the evaluation of the ontology based on additional use cases to demonstrate its generalization power.

The sentence at p.5 "It is normal for this to happen when classes are equivalent. Maybe they are not equivalent. If the ontology passes through Reasoner, it is possible. And with that ,..." is unclear. I recommend expanding and clarifying the consistency checking process.

In the sentence "The third stage, is conflict resolution ." the comma should be removed.

At p.5 two typos are present: "activities to befollowed" and "can beallocated".

A reference appears to be missing or incorrectly referenced: "(b10, )".