

## ***Abstract: Change History Ontology: A Theoretical Perspective***

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### **Abstract**

Knowledge constantly grows and is revised over time by stakeholders collaboratively. This makes the body of knowledge to move from loosely clustered terminology to semi-formal or even formal ontology. Change history management in evolving web ontologies is a collaborative task. A comprehensive solution is required that can address the multi-faceted issues, such as ontology recovery, change traceability, visualization of change effects, understanding the evolution behavior, and keeping the evolving ontology in a consistent state. To handle these issues, a change history management framework for dynamic web ontologies is developed that keep track of ontology changes. Change History Log (CHL) is the main contribution of this framework and is supported by a semantically rich and formally sound change representation scheme i.e., Change History Ontology (CHO). Changes are captured and then stored in CHL in conformance with CHO. Applications of CHL based on the reuse the change information for mapping reconciliation, collaborative ontology engineering, and change prediction are also discussed. The framework is implemented to work as a plug-in for ontology editors, such as Protégé. Change capturing capability of the proposed system has been compared with Changes Tab and Version Log Generator of Protégé. The experimental results have shown that the proposed change management process is accurate, consistent, and comprehensive.

### **Acknowledgement**

This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MEST) (No. 2011-0030823).