



## **VuWiki: An Ontology-Based Semantic Wiki for Vulnerability Assessments**

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The concept of vulnerability, as well as its implementation in vulnerability assessments, is used in various disciplines and contexts ranging from disaster management and reduction to ecology, public health or climate change and adaptation, and a corresponding multitude of ideas about how to conceptualize and measure vulnerability exists. Three decades of research in vulnerability have generated a complex and growing body of knowledge that challenges newcomers, practitioners and even experienced researchers. To provide a structured representation of the knowledge field “vulnerability assessment”, we have set up an ontology-based semantic wiki for reviewing and representing vulnerability assessments: VuWiki, [www.vuwiki.org](http://www.vuwiki.org).

Based on a survey of 55 vulnerability assessment studies, we first developed an ontology as an explicit reference system for describing vulnerability assessments. We developed the ontology in a theoretically controlled manner based on general systems theory and guided by principles for ontology development in the field of earth and environment (Raskin and Pan 2005). Four key questions form the first level “branches” or categories of the developed ontology: (1) Vulnerability of what? (2) Vulnerability to what? (3) What reference framework was used in the vulnerability assessment?, and (4) What methodological approach was used in the vulnerability assessment? These questions correspond to the basic, abstract structure of the knowledge domain of vulnerability assessments and have been deduced from theories and concepts of various disciplines.

The ontology was then implemented in a semantic wiki which allows for the classification and annotation of vulnerability assessments. As a semantic wiki, VuWiki does not aim at “synthesizing” a holistic and overarching model of vulnerability. Instead, it provides both scientists and practitioners with a uniform ontology as a reference system and offers easy and structured access to the knowledge field of vulnerability assessments with the possibility for any user to retrieve assessments using specific research criteria. Furthermore, Vuwiki can serve as a collaborative knowledge platform that allows for the active participation of those generating and using the knowledge represented in the wiki.