An ontology of soil properties and processes

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ABSTRACT ORIGINAL

Assessing the Underworld (ATU) is a large interdisciplinary UK research project, which addresses challenges in integrated inter-asset maintenance. As assets on the surface of the ground (e.g. roads or pavements) and those buried under it (e.g. pipes and cables) are supported by the ground, the properties and processes of soil affect the performance of these assets to a significant degree. In order to make integrated decisions, it is necessary to combine the knowledge and expertise in multiple areas, such as roads, soil, buried assets, sensing, etc. This requires an underpinning knowledge model, in the form of an ontology. Within this context, we present a new ontology for describing soil properties (e.g. soil strength) and processes (e.g. soil compaction), as well as how they affect each other. This ontology can be used to express how the ground affects and is affected by assets buried under the ground or on the ground surface. The ontology is written in OWL 2 and openly available from the University of Leeds data repository: http://doi.org/10.5518/54.