

Development of Ontology System towards Implementing a Knowledge Platform for Utilizing Natural Resources in a Regional Community

Terukazu Kumazawa ^{1*}, Takanori Matsui ², Michinori Kimura ³

1 Research Institute for Humanity and Nature, Japan

2 Division of Sustainable Energy and Environmental Engineering, Graduate school of Engineering, Osaka University, Japan

3 Center for Low Carbon Society Strategy, Japan Science and Technology Agency, Japan

kumazawa@chikyu.ac.jp^{1*}

Towards realizing societies in harmony with nature the action agendas including bringing together the wisdom of the people to enjoy multiple ecosystem services stably, marriage between traditional wisdom and modern science and exploring the way of co-management has been shown as a part of the activities of the Satoyama Initiative, which is one of the major environmental policy in Japan. In line with these action agendas our research group started developing the knowledge platform, which is expected to function as an intermediary for collaborating with all kinds of stakeholders. This paper aims at reporting the progress situation of the development of the ontology system to systematize and to reuse the practices for the sustainable use and management of natural resources as its first step.

We firstly design the reference model for utilizing natural resources in communities, which plays a role as a basic framework on implementing this knowledge platform as a computer system. Secondly, we produce the ontology adapted to this reference model experimentally. This ontology is constructed based on the Sustainability Science Ontology (SS ontology), which was our former work, and systematized sustainability science. In this time we define the additional concepts using the cases in the document published from the Ministry of the Environment in Japan: *Practices for the sustainable use and management of natural resources*. Thirdly, we attempt to represent the causal links written in the targeted document by using the concepts of this ontology. Finally, we propose the challenge and future direction towards developing the knowledge platform. Especially, we discuss about the linkage with GIS.

Keyword: knowledge platform, ontology, ecosystem services, natural resource management