Application Clinic: I-Choose – Building Ontology for Sustainable Product's Certification and Inspection

Abstract describing the project work
The I-Choose project is a research activity involving a research team that consists of practitioners and researchers from US, Mexico and Canada from the fields of information science, computer science, economics, and political science. The I-Choose project aims to develop data architecture based on ontology to support sustainable consumer choice so that consumers can make decisions that maximize their specific utility preferences. Our initial case is the market for certified coffee produced and consumed in the North American region. Our preliminary research and findings based on interviews with organizations in the supply chain have sharpened our focus on the specific function of certification and inspection by mission-driven third party certifiers as the "missing link" in providing trusted information about unobservable product attributes to customers in the sustainable product supply-chain. In relation, the current objective of I-Choose is to develop an OWL-based ontology that can satisfy three elements, a) run on a certification and inspection data sets such as those found in the Fairtrade certification system, b) handle several different types of problems (retrieving reliable data about an individual certification criteria, returning meta-data about criteria, respecting rules about data ownership, etc.), and c) handle a great amount of detail (such as integrating judgments from many criteria). The development of the ontology will follow the same logic and framing on the SemantEco Water Quality Ontology from the Tetherless World Constellation.

Collaborators:
Research Team members:

Names	Affiliations	Roles
Joanne Luciano	Rensselaer Polytechnic Institute, Tetherless World Constellation	Ontology experts, to provide guidance and work together with the subject experts on Fairtrade certification, subject experts on Supply-chain and Graduate Student to develop the I-Choose ontology.
David F. Andersen	School of Information Science & Rockefeller College of Public Administration, University at Albany	Data simulation expert
Giri K. Tayi	School of Business, University at Albany	Supply-chain expert
Luis Luna-Reyes	UDLAP, Puebla, Mexico	Data simulation expert and subject experts on Fairtrade certification and sustainable certified coffee supply-chain in Mexico
James Michaelis	Rensselaer Polytechnic Institute, Tetherless World Constellation	Expert in ontology, workflows, and is an expert in Provenance
Holly Jarman	University of Michigan	Trade governance and policy expert
Djoko Sigit Sayogo	Center for Technology in Government	Graduate student

Nic dePaula	University at Albany	Graduate student
Grace Begany	University at Albany	Graduate student
Theresa A. Pardo	Center for Technology in Government	Principal Investigator

In addition to the research team members, I-Choose project are also involving network members from different organizations involved in the sustainable and certified coffee supply chain.

Objectives / Goals

To avoid creating badly engineered ontology, we seek input and comments from the user community and ontologists in developing proof-of-concept of OWL ontology that can run on a sample data set of 3rd party certification and inspection of sustainable products as follows:

- We seek to gain input to help us evaluate the entire lifecycle of I-Choose ontology development -- from requirements gathering and analysis, through to design and implementation.
- We seek to gain input to evaluate whether the proposed I-Choose ontology fits the intended purpose of I-Choose project goals.
- We seek to gain input on the quality of the I-Choose ontology in its current condition.

Expected Deliverables:

- A robust proof-of-concept of OWL ontology that: a) can run on a sample certification and inspection data set such as those found in a Fairtrade certification system, b) handle several different types of problems (retrieving reliable data about an individual certification criteria, returning meta-data about criteria, respecting rules about data ownership, etc.) and c) handle a great amount of detail.
- An academic writing describing robust proof-of-concept of data architecture to support inspection and certification of sustainable products.

Resource / References

Wang, Ping et al. 2011. "A Semantic Portal for Next Generation Monitoring Systems." Pp. 253–268 in The Semantic Web – ISWC 2011, Lecture Notes in Computer Science, edited by Lora Aroyo et al. Springer Berlin Heidelberg Retrieved March 6, 2013 (http://link.springer.com/chapter/10.1007/978-3-642-25093-4_17).

Jarman, H. et al. 2011. I-Choose: Consumer Choice, Digital Government, and Sustainability in North America, Paper presented at the APPAM Conference, Washington DC.

Luna-Reyes, et al. (forthcoming) Full Information Product Pricing: An Information Strategy for Harnessing Consumer Choice to Create a More Sustainable World, submitted to Communication of the AIS.