

Developing a Metadata Application Profile for the Daily Hire Labour Presentation

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Abstract

EMPOWER SSE is a Foundation for Science and Technology (Fundação para a Ciência e Tecnologia - FCT, Portugal) and Department of Science & Technology (DST, India) financed research project that aims to use a Linked Open Data approach to empower Social and Solidarity Economy (SSE) Agents. It is a collaborative project between India and Portugal that is focused on defining a Linked Open Data framework to consolidate players of the informal sector, enabling a paradigm shift. The Indian economy can be mainly categorized into two sectors: formal and informal (Rada, C. (2009)). The informal sector differs from the formal as it is an unorganized sector and comprised of economic activities that are not covered by formal arrangements such as taxation, labour protections, minimum wage regulations, unemployment benefits, or documentation. The informal sector is mainly made of skilled people that follow their family job traditions, sometimes they are not even formally trained. The major economy in India depends on the skilled labour of this informal sector such e.g. farmers, electricians, food production, and small-scale industries (Kalyani, (2016)). This sector struggles with the lack of information, data sharing needs and interoperability issues across systems and organisational boundaries. In fact, this sector does not have any visibility to the society and therefore does not have the possibility to do business, as most of the agents of this sector do not reach the end of the chain. This blocks them from getting proper exposure and a better livelihood. Here agents can be job seekers or job providers.

The possibility to publish Linked Open Data (LOD) to portray the skills of these workers of the informal sector will help them to be more visible in the digital world, opening the possibility of other technological agents to build software systems that are fed by this data. In fact, the LOD paradigm will provide a way to establish the connection between skilled labour and common people. This possibility will also allow the informal sector to contribute to the development of India.

The Semantic Web is an ecosystem that enhances interoperability, enabling though scalability by opening the possibility to cross information between LOD resources on the Semantic Web cloud. The possibilities of inference over this LOD will eventually open new knowledge to raise new awareness on policy makers.

The Linked Open Data eco-system allows to connect resources from all datasets available as LOD. In order to be semantically interoperable with people with the same or similar skills and people requiring services, the datasets need to be structured following common models and using standard RDF vocabularies. A metadata application profile (MAP) is a “generic construct for designing metadata records” (Coyle & Baker, 2009), it is a model used to identify the metadata elements and the constraints over the data for a particular domain or application. According to Nilsson, Baker, & Johnston (2008), a MAP is a construct that enhances interoperability.

EMPOWER SSE is developing a MAP (DH-MAP: Daily Hire-Metadata Application Profile) for the informal sector considering that this sector needs to be interoperable with the SSE community (see Curado Malta, Baptista, & Parente, (2015)) and the formal sector. The goal is to develop a MAP that describes the workers (or groups of workers) and their interactions with the job provider. We also intend to develop a software application to handle this data. The main goal of this application is to provide a way to place an appointment between the employer (job provider) and a skilled worker (job seeker) in the informal sector. Job providers first place their order, or need of a certain work, in the system. According to the answer of the system, they book a worker or worker group and make an appointment. After job completion, job providers rate the worker. All the data will be available as LOD in a triplestore for use and reuse by people and machines.

The development of the MAP-DH follows Me4MAP (see Curado Malta & Baptista (2013)). Me4MAP defines as first step the elicitation of the functional requirements. We have built a use-case model to identify the functional requirements. The second step defined by Me4MAP is to build a Domain Model. This model is defined with the information that comes from the functional requirements. The third step is the presentation of the Description Set Profile (DSP). To achieve such a goal, Me4MAP states that there is the need to build a constraints matrix which is the matching of an RDF vocabulary term with each property of the domain model. It also provides information about the constraints (cardinality, syntax encoding schemes, vocabulary encoding schemes, domain, range). We are currently working in the constraints matrix.

The goal of the presentation is to discuss the the draft version of the milestones of the MAP done until now (such as use cases, functional requirements, domain model and constraints matrix) and to receive feedback from the metadata community.

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References

- Coyle, K., & Baker, T. (2009). DCMI: Guidelines for Dublin Core Application Profiles (Working Draft). Retrieved 15 January 2018, from <http://dublincore.org/documents/profile-guidelines/>
- Curado Malta, M., & Baptista, A. A. (2013). A method for the development of Dublin Core Application Profiles (Me4DCAP V0.2): detailed description. In Proceedings on International Conference on Dublin Core and Metadata Applications (pp. 90–103). Lisbon, Portugal: Dublin Core Metadata Initiative. Retrieved from <http://dcpapers.dublincore.org/pubs/article/view/3674>
- Curado Malta, M., Baptista, A. A., & Parente, C. (2015). A DCAP for the Social and Solidarity Economy. In Proceedings of the International Conference on Dublin Core and Metadata Applications (pp. 20–29). Lisbon, Portugal: Dublin Core Metadata Initiative. Retrieved from <http://dcevents.dublincore.org/IntConf/dc-2015/paper/view/372>
- Kalyani, M. (2016). Indian informal sector: an analysis. *International Journal of Managerial Studies and Research (IJMSR)*, vol 4, 2016.

Nilsson, M., Baker, T., & Johnston, P. (2008). DCMI: Singapore Framework for Dublin Core Application Profiles. Retrieved 20 April 2018, from <http://dublincore.org/documents/profile-guidelines/>

Rada, C. (2009). Formal and informal sectors in China and India: An accounting-based approach (No. 2009-02). Working Paper, University of Utah, Department of Economics.