Measuring the Resilience of e-Governments Using an Ontology

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Abstract : The variability that exists across governments, her departments and the provisioning of services has been areas of concern in the E-Government domain. There is a need for reuse and integration across government departments which are accompanied by varying degrees of risks and threats. There is also the need for assessment, prevention, preparation, response and recovery when dealing with these risks or threats. The ability of a government to cope with the emerging changes that occur within it is known as resilience. In order to forge ahead with concerted efforts to manage reuse and integration induced risks or threats to governments, the ambiguities contained within resilience must be addressed. Enhancing resilience in the E-Government domain is synonymous with reducing risks governments face with provisioning of services as well as reuse of components across departments. Therefore, it can be said that resilience is responsible for the reduction in government's vulnerability to changes. In this paper, we present the use of the ontology to measure the resilience of governments. This ontology is made up of a well-defined construct for the taxonomy of resilience. A specific class known as 'Resilience Requirements' is added to the ontology. This class embraces the concept of resilience into the E-Government domain ontology. Considering that the E-Government domain is a highly complex one made up of different departments offering different services, the reliability and resilience of the E-Government domain have become more complex and critical to understand. We present questions that can help a government access how prepared they are in the face of risks and what steps can be taken to recover from them. These questions can be asked with the use of queries. The ontology focuses on developing a case study section that is used to explore ways in which government departments can become resilient to the different kinds of risks and threats they may face. A collection of resilience tools and resources have been developed in our ontology to encourage governments to take steps to prepare for emergencies and risks that a government may face with the integration of departments and reuse of components across government departments. To achieve this, the ontology has been extended by rules. We present two tools for understanding resilience in the E-Government domain as a risk analysis target and the output of these tools when applied to resilience in the E-Government domain. We introduce the classification of resilience using the defined taxonomy and modelling of existent relationships based on the defined taxonomy. The ontology is constructed on formal theory and it provides a semantic reference framework for the concept of resilience. Key terms which fall under the purview of resilience with respect to E-Governments are defined. Terms are made explicit and the relationships that exist between risks and resilience are made explicit. The overall aim of the ontology is to use it within standards that would be followed by all governments for government-based resilience measures.
Keywords : E-Government, Ontology, Relationships, Resilience, Risks, Threats