

The Ontology of System Archetype

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Contemporary tools and techniques for analysis and prediction of business operational problems seems don't have a powerful contribution to support "time delaying", "balancing feedback", and "reinforcing feedback". Because those methods can only deal with explicit problems can not handle implicit problems. System archetype is iterative event pattern in our work. It is a good way to represent the complexity system and help management find the system dynamic complexity problems and deal with them as soon as possible. The patterns of system archetype include "balancing process with delay", "Limits to growth", "shifting the burden", "eroding goals", "escalation", "success to the successful", "tragedy of the commons", "fixes that fail", and "growth and under-investment".

Each pattern of system archetype contains elements. These factors can be separately defined classes of system archetype and stored instances of these classes. This work use Protégé-2000 to build ontology in problem-solving and decision-making from system archetype view. Businesses have a variety of chance use for a knowledge base of system archetype pattern to find potential problem. This work

knowledge base includes most of the iterative problems in business, indicating when met, in what situation, etc. The information about exceptions and solutions also included.

The affection factors of system archetype contain many elements about business operational processes. For constructing system archetype ontology, first we analyze each pattern's elements. The elements can be clarified into different catalogs. The catalog is regarded as class and element is instance. Second, find the system archetype rules between elements or patterns. Those rules be regarded as relationships among them. Then use an ontology editor in Protégé-2000, Classes tab, to define classes and class hierarchy, slots and slot-value restrictions, relationships between classes and properties of these relationships.

Then we define data entry forms. According to the types of the slots specified, we create a form for acquiring instances. The form can be rearranged the column on the screen. It also can be changed other properties. For obtaining instances of the classes defined in system archetype, we use instances tab of Protégé-2000, a knowledge-acquisition tool. Finally, check these rules and elements mapped into relations and instances/classes.

A leverage points in a system, where the smallest efforts can make the biggest differences, seems can be found by using this ontology. And then extract the critical

instance of system archetype. By using Protégé-2000, the technique proposed in this work makes it easier to work simultaneously with both classes and instances in problem-solving and decision-making.

Keywords: problem-solving, decision-making, system archetype, ontology