

# AN ONTOLOGICAL APPROACH TO MANUFACTURING SUPPLIER DISCOVERY

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## ABSTRACT

In modern manufacturing, supply chains are increasingly becoming global, virtual and short-lived requiring rapid and dynamic changes to keep up with the current marketplace. A challenge in this respect is determining suitable suppliers in a timely and accurate fashion. Current methods of finding potential suppliers have difficulties fully addressing both attributes: time and accuracy. Keyword-based search methods performed by computers can be very fast. However, given a textual description of a supplier, without performing complicated natural language processing, it is difficult to determine the context of words in a block of text resulting in inaccurate results. Human domain experts are able to interpret context within a textual description as well as perform reasoning with what is known about a supplier; this allows for highly accurate results with a small set of suppliers. As the number of possible suppliers increases, the time for the human expert to examine all possible suppliers increases and the potential exists for an increased number of human errors on the part of the domain expert.

In this presentation, the Manufacturing Service Description Language (MSDL), an ontology for formal representation of suppliers' capabilities and manufacturing services will be described. MSDL uses the Web Ontology Language (OWL), a standard endorsed by the World Wide Web Consortium, which allows definitions and meanings to be constructed for manufacturing concepts that are understandable by computers. Also information about a search engine that has been developed that interprets the MSDL ontology will be presented. A user can use the search engine to create a query based upon their particular needs and desires in a supplier. The search engine returns a ranked list of potential suppliers based upon the query and the information contained in the ontology. Finally, a comparison will be shown of the results of this search engine with the results from a pair of independent domain experts.