

A comparison of Approaches to Knowledge Representation in Computer systems

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Abstract

The representation of knowledge in a computer system can take one of two forms: *document centric* where the digital versions of the documents and databases that people use to communicate and preserve knowledge comprise the knowledge representation system; or *knowledge centric* where the computer system stores the models comprising knowledge independent of any particular documentary expression. This paper clarifies the distinction between these two approaches, and examines the convergence of knowledge centric computing with various ontology initiatives, and with advanced graphics capability to deliver next generation applications.

We proceed with the notion that next generation applications will be knowledge centric and outline major goals for next generation applications and provide a qualitative comparison of the anticipated benefits of knowledge centric systems.

We then look at a practical implementation of many of the key elements of next generation solutions as currently embodied in Cogito products, discuss some of the design and implementation approaches used in Cogito's products and summarize recent performance benchmarking that validate robust performance of Cogito's graph database (called the Knowledge Center™) at industrial scales.

The conclusions drawn in this paper include significant business and commercial implications found in the comparison of the *document centric vs. knowledge centric* approaches. The findings indicate that knowledge centric systems offer the potential for major reductions in the cost of knowledge formation and dissemination, improvements in quality and consistency of information, and enable global concurrency in workgroup collaboration.