Leveraging Knowledge Bases, a decade ago, and now

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In this talk, I'll first present a brief history of my prior experience with Description Logics (about 10 years ago), and some new ideas for the next generation of e-commerce where DL's might well play a central role.

In late 1986, a group of us, led by Ron Brachman, and including Peter Selfridge, Bruce Ballard, and Diane Litman, decided to test the hypothesis that a non-trivial, domain-specific knowledge base could usefully document information to support developers engaged in maintaining a large and complex software system. Our goal was to build a large knowledge base to document a sizeable portion of the software controlling small telephone switch, and demonstrate that we could usefully answer questions about the system. In about 2-3 years, we had built the LaSSIE system, and we had demonstrably achieved our goals. However, the cost of constructing and maintaining the knowledge remained an obstacle to getting the system used by developers. This led us in a new direction: we became interested in the problem of automatically extracting knowledge directly from the source code. We constructed GENOA, a flexible, customizable, and re-targetable infra-structure to extract information from source code. This work was successful in unexpected other ways, took on a life of its own, and demanded much of our time and attention. Meanwhile, the efort to extract useful knowledge from source code was stalled by various technical obstacles, and so was the originial LaSSIE effort.

More recently, there have arisen some new resons to believe there is an exciting new avenue for applying Description Logics to benefit people. This arises from the vast increase in the number of people with permanent broad-band access to the web (using such technologies as ISDN and DSL), technologies such as internet-scale event distribution, cryptographic protocols, and standardized public ontologies. We bring up the possibility of a new type of e-commerce, beyond B2B and B2C, which one might call "P2P" or Person-to-Person. This type of e-commerce might bring us to a more democratic, lower-overhead, finer-grained type of economy that relies more upon technology than on large monolothic brand-names. This type of e-commerce might well bring greater competition and efficiency to the benefit of individuals executing small trades. In this type of e-commerce, knowledge, ontology, reasoning, and thus, Description Logics, might play a central role. At the moment, P2P is not much more than a ambitious vision shared by a small number of researchers. We will present the main ideas behind this vision, and solicit your feedback, criticism, and (hopefully) collaboration. A more detailed paper on "P2P" can be found at

http://seclab.cs.ucdavis.edu/~devanbu/files/P2P.pdf