

Desenvolvimento de Ontologias para Engenharia de Software e Banco de Dados: Um Tutorial Prático

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***Abstract.** As the volume of information grows exponentially in the Web, researchers from industry and academia are now exploring the possibility of creating a "Semantic Web," in which meaning is made explicit, allowing machines to process and integrate Web resources intelligently. Central to this idea is the use of ontologies, which provide a lingua franca, allowing machines to interact in a meaningful way.*

As a result of the efforts to create this Semantic Web, a series of new technologies have emerged. These technologies focus on ontology construction and integration processes. Tools to support the edition, integration, merging, alignment, visualization and verification of ontologies are now available.

In this tutorial, we focus on the potential opportunities these technologies offer to provide lightweight and fresher solutions to old problems in the Software Engineering and Database practices.

One such problem is the integration between heterogeneous models. Software engineers use of a plethora of different models in their practice. Traditionally, there are the functional, data and behavioral dimensions, but some practitioners are arguing in favor of object, goal and aspect oriented models as well. Perhaps the addition of an ontological markup to those artifacts, combined with mapping tools, might help identify the dependencies among such models. Another problem is configuration management – ontologies could be used to provide metadata information that is attached to the artifact itself, as opposed to depend on specific tool. This will facilitate dissemination and the reuse of models across different platforms.

The database area offers similar examples. First of all, ontologies provide a way of creating semantically annotated dictionaries that document data and metadata. The dictionary may reference ontologies and metadata schemes defined elsewhere, such as the Dublin Core Metadata Element Set, to elicit database semantics in a way that is universally understood. Expanding this idea further, ontologies may provide the pivot point of database federations. Rather than trying to a posteriori integrate the individual databases, designers should strive to create a reference ontology for the domain of discourse and design the database schemas around it. This argument just reinforces the observation that the absence of adequate metadata is one of the reasons why database federations do not succeed. In another direction, ontologies may help model user preferences and then used to drive recommendation subsystems or query modification components that help user access data.