

Post Doctoral Proposal 2005 Campaign



- **Research Project-Team : EXMO**
- **Title : Transformation proofs on the semantic web**
- **Description :**

The worldwide web is both the main factor and the first application of digital information interchange. The semantic web aims at using formal syntax with well-defined semantics for improving this process. Instead of text pages, it allows people to publish formal expressions according to some background theory (called ontology).

Working with the semantic web requires to import or transform semantic web expressions to use it in a new context. For instance, using information coming from a corporate source to integrate it in a portfolio management system. But there is no reason that this information is described in the same language with regard to the same ontology. It is thus necessary to transform the knowledge from one formalism to another (very often using language rewriting).

Obviously, this must be done in accordance with the semantics of the language. However, it is not easy to know if a particular transformation satisfies a particular property (e.g., preserving the models of a representation).

We would like to investigate the Proof-Carrying Code principle in the context of transformation engineering. This principle consists of attaching proofs of satisfied properties to transformations and checking these proofs before using the transformations. This is also useful to prove properties of transformations designed by composing other transformations.

The goal of this post-doctoral stay is to investigate further these principles and to design a framework (based on existing tools) in which "proof-carrying transformations" could be embedded within the semantic web infrastructure.

- mention experiments with tools as well.

- **Requirements (educational and technical background, knowledge of specific material) :**
 - Background in manipulating proofs and programs.
 - Autonomous researcher.
 - Interaction with other researchers.
 - Writing capabilities.
 - Innovative.

- **Person to contact :**

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- **Project Web Server : <http://www.inrialpes.fr/exmo/>**