



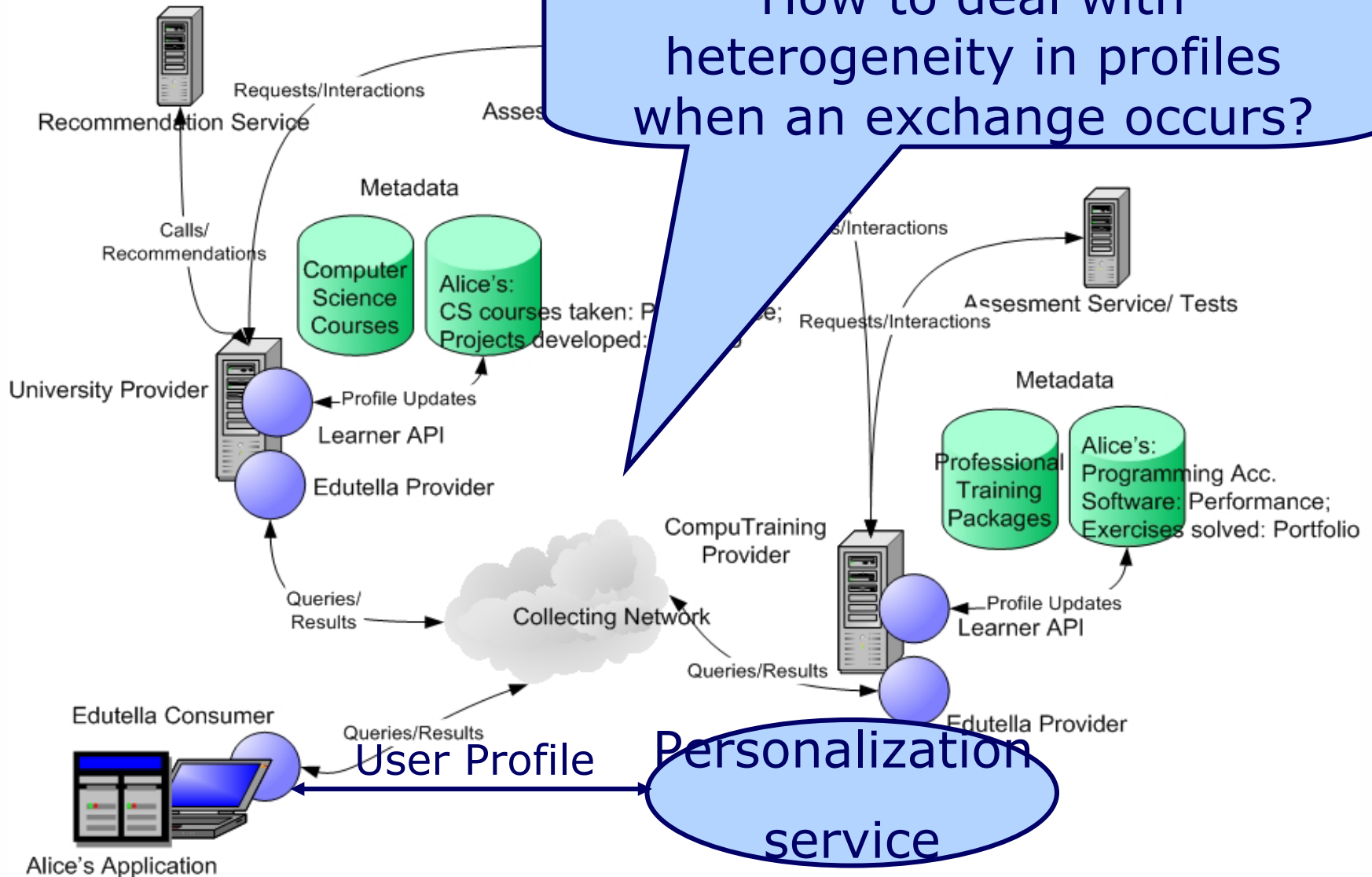
Learner Modelling on the Semantic Web

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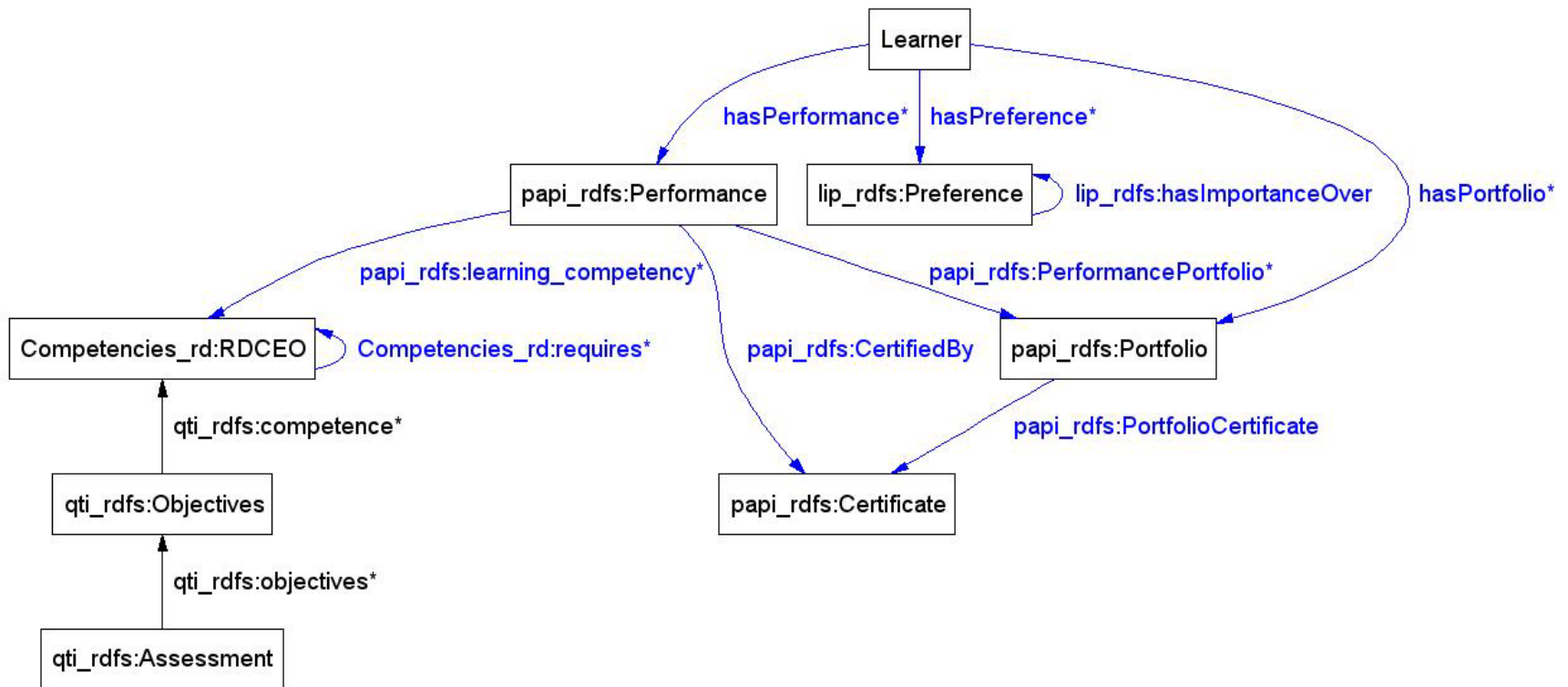


How to deal with heterogeneity in profiles when an exchange occurs?





Learner Profile Schema





Inconsistencies in Learner Profiles

Properties have different literal values. This can occur when the property was updated with a new value in one system.

Properties have different object values. For example when the property in one system was assigned a new resource as value which replaced the old one.

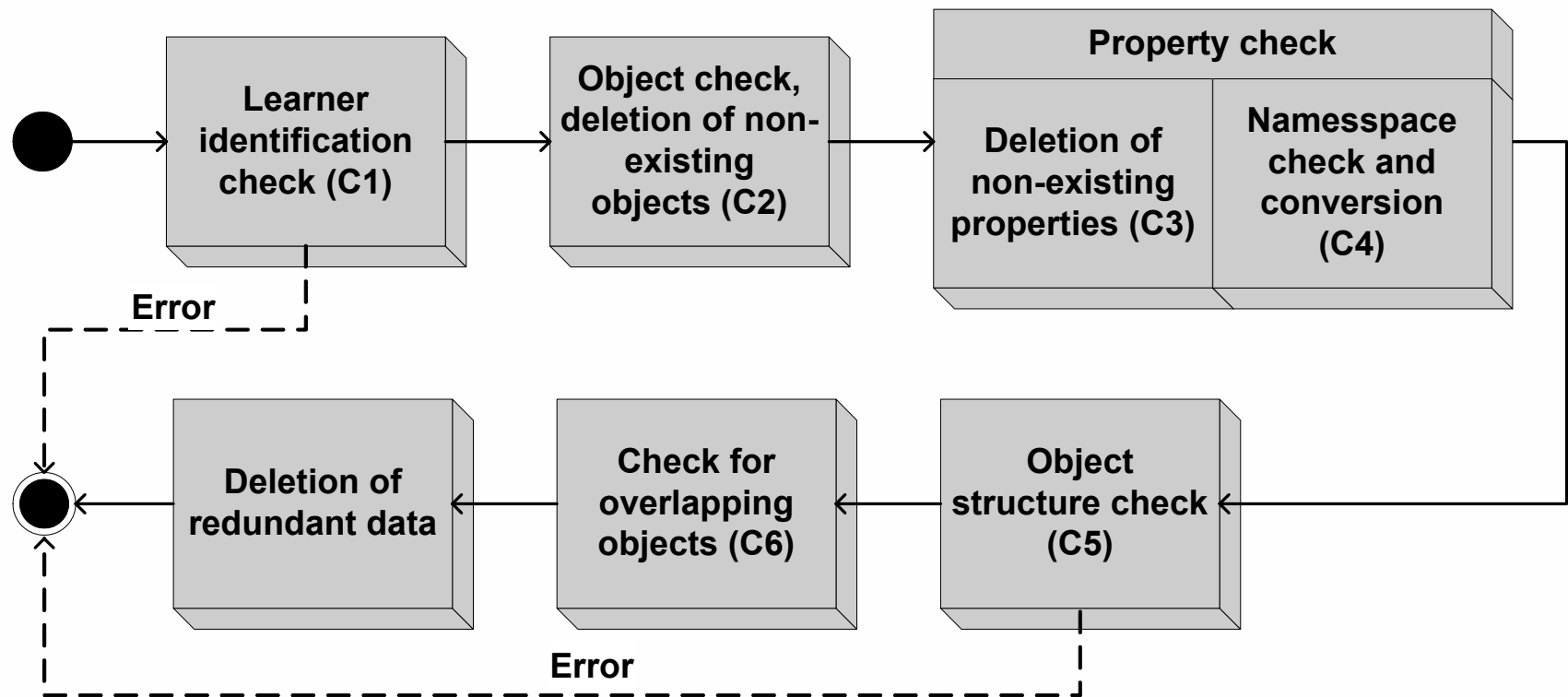
Subjects have additional properties. An existing subject was updated in one system with additional properties.

Properties of a subject were deleted in one system.

Anonymous Nodes

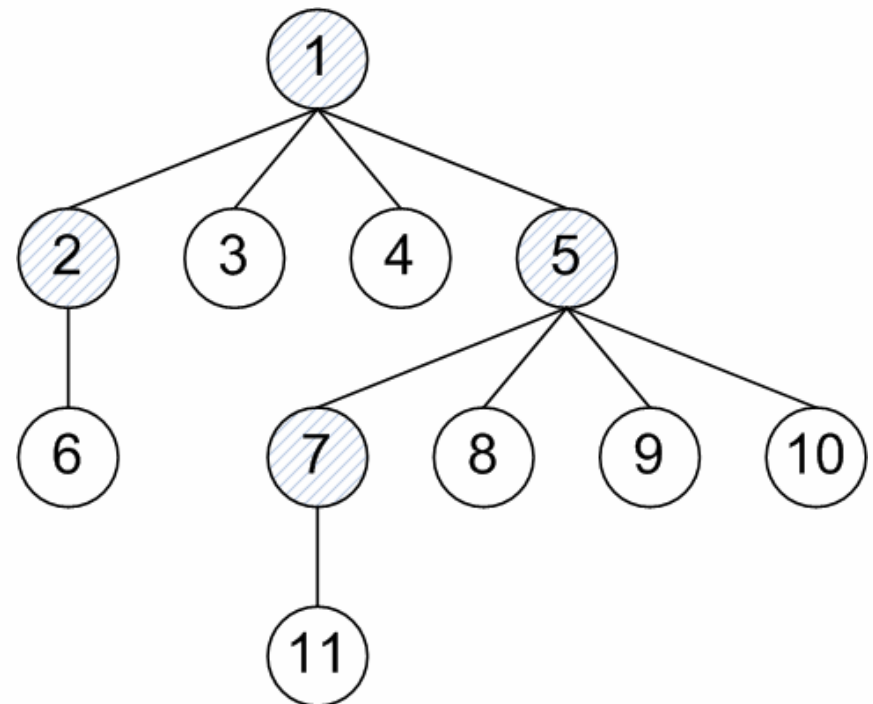
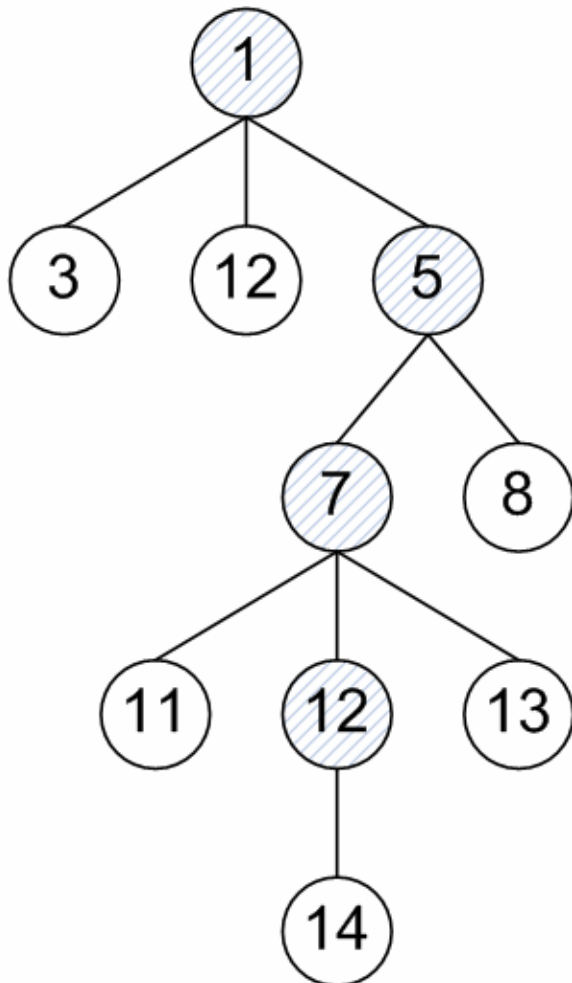


Conservative Import





Example





Further Import Strategies

Subgraph Equality: a subgraph which can be found in both compared graphs has to exist

Predefined Property Equality: based on critical properties which must exist in both graphs

Percentage Equality



Percentage Equality

The degree of equality for two graphs

At each level: the number of nodes found in both compared subgraphs divided by total number of nodes in both subgraphs

Requires a threshold to assert the equality

Further rules are needed to minimize errors in decision making



Example of Rules

All nodes of the one graph which are not anonymous (i.e. can be uniquely identified by a URI) must also be contained in the other graph. This would mean that the basic structure must always be identical.

Only properties which have a literal as value and not a subject may differ. This means that if a property with a resource as object exists in one graph it must also exist in the other one.

A difference may not be above a certain “level” in the graph. This assumes that information which can be found near the root of the graph is more important than information below.



Conclusions

We have developed an infrastructure for learner profile management on the Semantic Web

It is based on fragments described according to open specifications

We have developed an conservative import procedure

We have proposed other less conservative rules to import fragments

The import and mapping still a problem: which threshold to set, how to import from completely different schemas



Questions?

sourceforge.net/projects/swlearner

www.elena-project.org

www-prolearn-project.org