Passerelle- A plugin that connects Protégé to Sesame

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Introduction

- Passerelle is a plug-in that is developed for Protégé to support Sesame.
- Passerelle will provide the possibility to connect the ontology with Sesame architectures in order to store and query RDF data from Protégé.

Do we really need a plug-in ?

- We found that there was a major problem for the ontology developers who want to use Protégé with Sesame:
  - The problem is that Protégé 2000 are using an old namespace version of RDF compare with sesame. So the user has to write a program to pre-process the RDF file from protégé before it is loaded into sesame, which was a bit tricky.

Sesame

- Sesame is a web based architecture which facilitates storage of *RDF Query Language* (RQL) data and schema information
- Sesame support PostgreSQL, MySQL and Oracle
- Sesame uses *Repository Abstraction Layer* (RAL) where all the DBMS code is saved
- It is possible to communicate over HTTP, Remote Method Invocation (RMI) and Simple Object Access Protocol (SOAP)

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Passerelle

- Passerelle bridges the gap between the two entities Protégé and Sesame.
- Passerelle exports the required Resource Description Framework (RDF) files to Sesame by communicating with the respective modules of Sesame.

Design of Passerelle

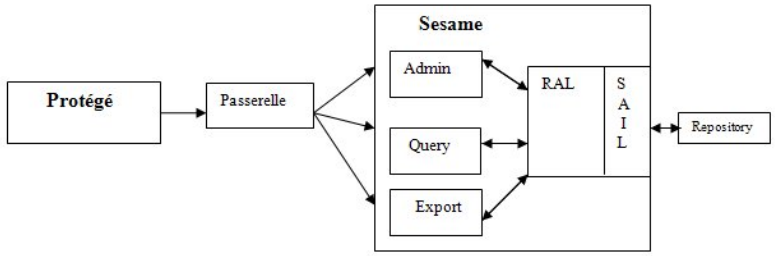
- The entire project is divided into three main modules.
- The three main modules which are designed are:
  - Module concerning Protégé and its libraries
  - Module concerning Sesame and its libraries
  - Module concerning the total layout

Design of Passerelle (Continued)

- The module concerning Protégé is intended to extend the AbstractTabWidget class and implement an initialising method.
- The module then loads the required RDFS file
  - (<!ENTITY rdfs 'http://www.w3.org/2000/01/rdf-schema#'>)

Design of Passerelle (Continued)

- The module concerning Sesame is mainly intended to export this changed file. For this purpose we have concentrated our work on the Admin module.
  - Adding RDF data/Schema
  - Clearing the repository
- We have implemented the Sesame's repository API such that it can communicate with the Sesame server package.
- We have then created a Remote Service and finally we have set the appropriate parameters like username, password, database to be used and parsers to parse the input file.



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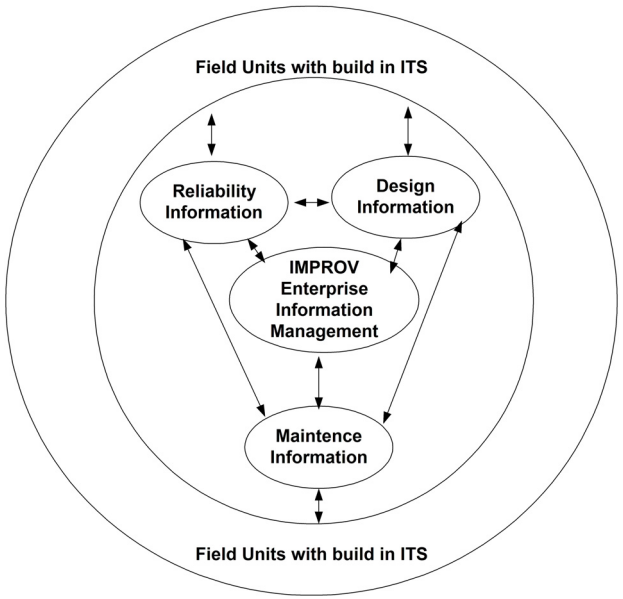
IMPROV

- The problem is a distributed mobile problem
- The units and maintenance personnel operate in distributed environment
- IMPROV loops in three main elements
  - Reliability Information
  - Design Information
  - Maintenance Information



IMPROV (Continued)

- Solution for the first problem:
  - Connect the mobile unit to an Enterprise Information Management using GSM for data communication and GPS for position etc
- Solution for the second problem:
  - We will use Intelligent Agents in the vehicle to synthesize the key data from the unit and communicate to the Enterprise Information Management.

IMPROV (Continued)

- Solution for the third problem
  - Ontology's will be used to structure the information in a semantic way which enables greater flexibility in information storage.

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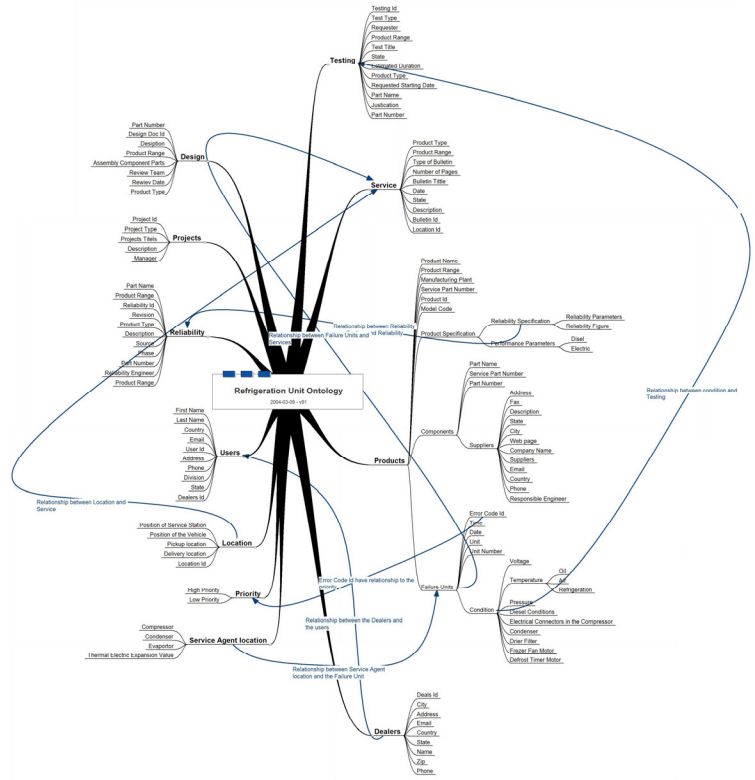
Passerelle used in IMPROV

- Passerelle was developed for use in the IMPROV project
- The subclass Failure Unit will receive information from different agents when problems exist in the unit. Condition is the subclass of Failure unit class and it has all the values from the different agents in the units
- The slot Error Code Id describes the type of error and the entire description of the Error Code Id exists in a table within the database so the service personal knows what type of error it is.
- The class Failure Unit also sends information to class Test, so the design engineer of the units can compare the values with the test values.



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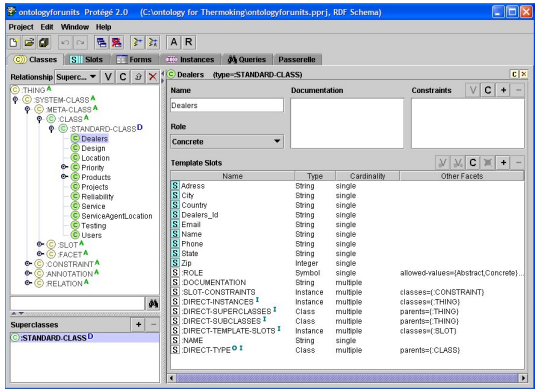
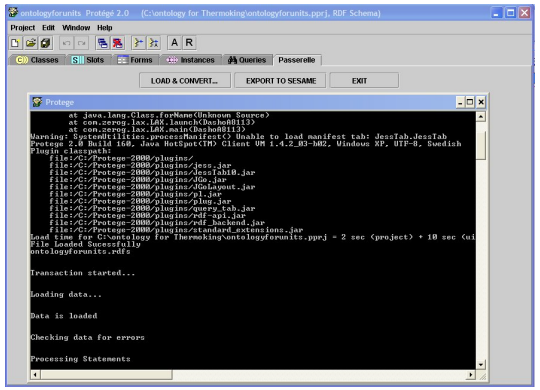
Passerelle used in IMPROV (Continued)

- The ontology was saved in an RDF format
- The RDF file is then loaded into Passerelle and then it is then connected to Sesame
- The database for IMPROV was developed by using MySQL
- If in the future we decide to use Oracle as a database system it will not be a problem





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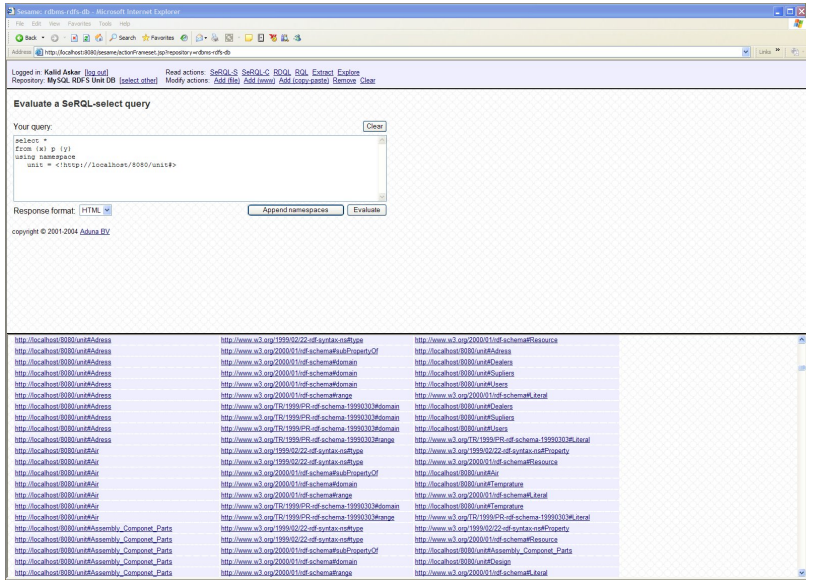
Passerelle used in IMPROV (Continued)

- Since IMPROV is under construction we are at the moment querying our ontology through the web interface.



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Conclusion

- When we were developing Passerelle, there was not possibility to make RQL queries in Protégé
- Many groups were using Protégé in combination with Sesame
- But incompatible namespaces always existed. Passerelle aimed at solving this problem by removing barriers to integrate between the entities
- Passerelle offer the ontology developers the flexibility of using sesame while continuing to use protégé as there ontology editor
- It is important to support Protégé rather then switch to another ontology editor since protégé offers other advantages such the only editor which facilitates the development of plug-ins