# dotNetRDF Design Document

## dotNetRDF SPIN Implementation

Library: dotNetRDF.Spin.dll  
Version: 0.1.0  
Target Date: June 2011  
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Last Updated: 00/00/0000 00:00:00

## Required Features

* Convert SPARQL Queries to SPIN RDF representation
* Convert SPIN RDF back to SPARQL queries
* Support use of SPIN Constraints
* Support use of SPIN Constructors
* Support SPIN Functions

## Time Permitting Features

* Use SPIN to add an OWL 2 RL reasoned based on TopQuadrant’s SPIN rules for the OWL 2 RL profile

## Known Issues/Bugs to Fix

* Complex Collection serialisation in dotNetRDF.dll (fixed for the 0.4.1 releases)

# Design

## Convert SPIN Queries to SPIN RDF

Use extension methods over the public Query API to do the conversion. Use unit tests to test against output from TopQuadrant’s online Spin2Rdf service

## Convert SPIN RDF to SPARQL Query

Use static/extension methods which can be applied to an IGraph given a specific INode extracts a SPARQL Query encoded in SPIN RDF

## Support use of SPIN Constraints

Implement classes which can be used to determine whether RDF is valid against some SPIN Constraints. One of these could be an ISyntaxValidator but should also have classes that can apply to graphs already loaded in memory.

## Support use of SPIN Constructors

Implement an IInferenceEngine which can use SPIN constructors to infer new information

## Support SPIN Functions

Add an ISparqlCustomExpressionFactory that can load and apply arbitrary SPIN functions

## OWL 2 RL Reasoner using SPIN

TopQuadrant have previously talked about an OWL 2 RL reasoned built entirely using SPIN rules, get a copy of their rules and add an OWL 2 RL reasoned either as an IInferenceEngine or as a full blown IOwlReasoner depending on how powerful the reasoner is.