

# SPARQL PROTOCOL AND RDF QUERY LANGUAGE

## TERMS

- **TRIPLE**  
A 3 property object that identifies the value of a property on an object instance within a RDF Graph
  - **SUBJECT**  
IRI
  - **PREDICATE**  
IRI
  - **OBJECT**  
IRI or Literal
- **TERM**  
A single item within a triple; subject, predicate, or object
- **QUERY VARIABLE**  
Identifiers that are bound during the execution of a query.  
Ex: ?someVar
- **TRIPLE PATTERN**  
A RDF triple identifier that may contain query variables for binding. Ex:  
<subject> <predicate> ?someVar
- **GRAPH PATTERN**  
A triple pattern that is used during query execution to bind query variables and return matching results. Written within {...} and using “.” or “;” to separate triple patterns. “;” is used when two triple patterns share the same subject and is a shortcut allowing the second triple pattern to exclude the subject declaration.
- **PREFIX**  
A XML style QName can be used to shorten IRI references in triple patterns if a PREFIX is defined at the beginning of the query. Ex: PREFIX pf: <IRI>
- **PROJECTION**  
The set of variables returned by a query

## COMMON NAMESPACES

NAMESPACE	PREFIX	URI
RDF	rdf	http://www.w3.org/1999/02/22-rdf-syntax-ns#
OWL	owl	http://www.w3.org/2002/07/owl#
XSD	xsd	http://www.w3.org/2001/XMLSchema#
Dublin Core	dc	http://purl.org/dc/elements/1.1/
MPEG 21 DID	did	urn:mpeg:mpeg21:2002:02-DIDMODEL-NS#
MPEG 21 DII	dii	urn:mpeg:mpeg21:2002:01-DII-NS#
IMM	imm	http://schemas.microsoft.com/imm/core/1.0#

## EXAMPLE QUERIES

```
PREFIX did: <urn:mpeg:mpeg21:2002:02-DIDMODEL-NS#>
PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX imm: <http://schemas.microsoft.com/imm/core/1.0#>

SELECT ?title
WHERE
{
  <guid:_A101E8DE-C4F6-48a6-8DF3-E21034084282> <did:ItemCollection> ?childId.
  ?childId <dc:title> ?title;
  <rdf:type> <imm:MediaItem>.
}

PREFIX did: <urn:mpeg:mpeg21:2002:02-DIDMODEL-NS#>
PREFIX imm: <http://schemas.microsoft.com/imm/core/1.0#>

SELECT ?proxyPath ?frameRate ?startTimeCode
WHERE
{
  <guid:_1DAFFDD3-E7C7-4d30-BB09-B984EF280389> <did:ResourceCollection>
  ?resId.
  ?resId <imm:IsProxy> 'true';
  <did:MimeType> 'video/x-ms-wmv';
  <did:Ref> ?proxyPath.
  ?resId <imm:VideoFormat> ?vidFormatId.
  ?vidFormatId <imm:FrameRate> ?frameRate.
  OPTIONAL
  {
    ?vidFormatId <imm:StartTimeCode> ?startTimeCode
  }
}

PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX did: <urn:mpeg:mpeg21:2002:02-DIDMODEL-NS#>

SELECT ?rowId
WHERE
{
  {?currentId <did:ContainerCollection> ?rowId. }
  UNION
  { ?currentId <did:ItemCollection> ?rowId.}
  FILTER (?currentId = <guid:_13C55FB2-2E00-4d58-B55A-B27DC52C201D>)
}

PREFIX imm: <http://schemas.microsoft.com/imm/core/1.0#>
PREFIX dc: <http://purl.org/dc/elements/1.1/>
PREFIX did: <urn:mpeg:mpeg21:2002:02-DIDMODEL-NS#>

SELECT ?rowId ?posterRef ?title ?description ?modified ?modifiedBy
WHERE
{
  ?currentId <did:ItemCollection> ?rowId.
  ?rowId <dc:title> ?title;
  <dc:modified> ?modified;
  <imm:modifiedBy> ?modifiedBy.
  OPTIONAL
  {
    ?currentId <dc:description> ?description.
  }
  OPTIONAL
  {
    ?rowId <imm:PosterFrame> ?pfId.
    ?pfId <did:ResourceCollection> ?resId.
    ?resId <did:Ref> ?posterRef.
  }
  FILTER (?currentId = <guid:_13C55FB2-2E00-4d58-B55A-B27DC52C201D>)
}
LIMIT 25
ORDER BY ?modified
```

## QUERY TYPES

- ASK
- CONSTRUCT
- DESCRIBE
- SELECT

## QUERY MODIFIERS

- ORDER BY
- DISTINCT
- OFFSET
- LIMIT

Listed in order of application.

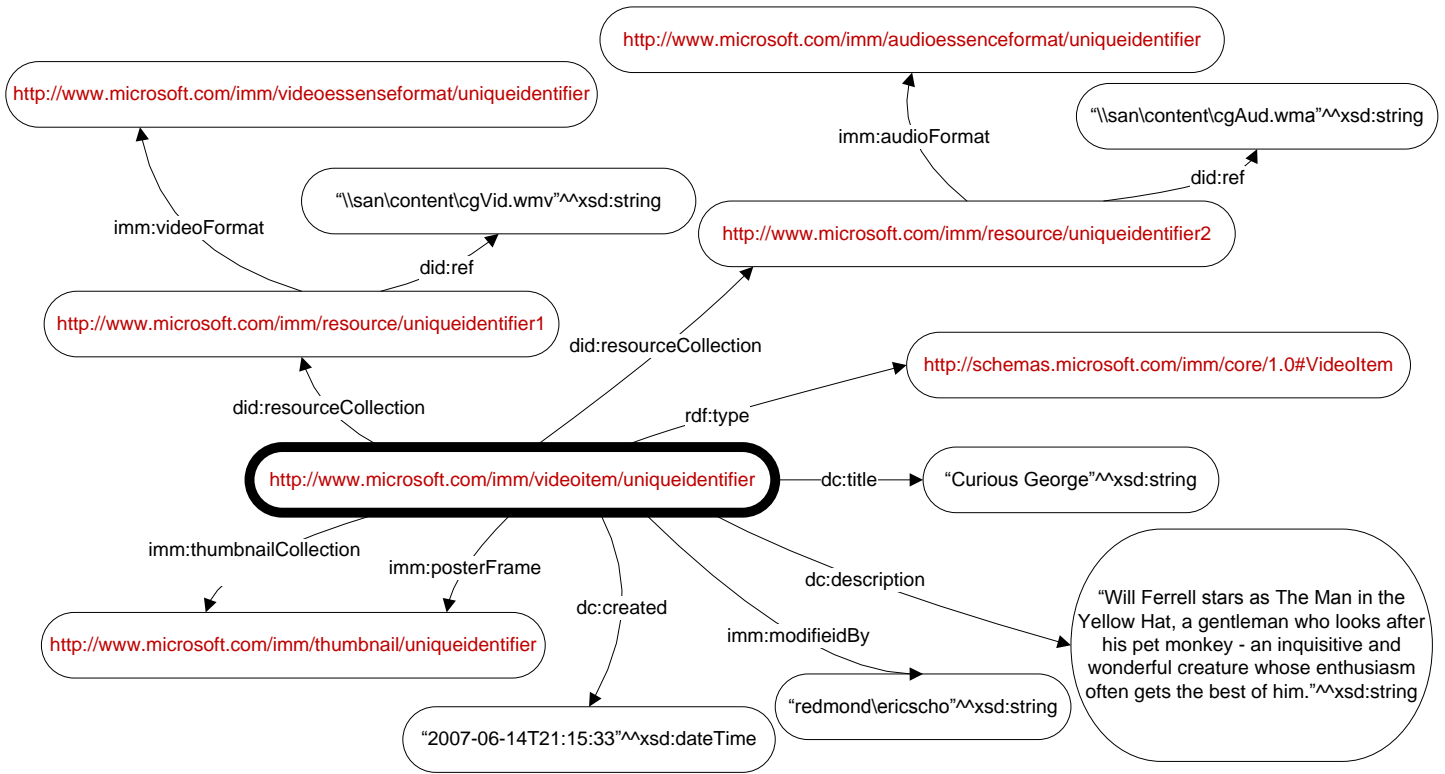
## RESULT MODIFIERS

- FILTER
- OPTIONAL
- UNION

## OPERATORS

- **LOGICAL**
  - A || B
  - A && B
  - !A
  - (A)
- **UNARY**
  - +A
  - -A
- **BINARY**
  - A+B
  - A-B
  - A\*B
  - A/B
- **BOOLEAN**
  - BOUND(A)
  - isIRI(A), isURI(A)
  - isBlank(A)
  - isLiteral(A)
- **String**
  - STR(A)
  - LANG(A)
  - DATATYPE(A)
- **STRING MATCH**
  - REGEX(string, pattern, [flags])

## GRAPH



## TRIPLES

SUBJECT	PREDICATE	OBJECT	TYPE
http://www.microsoft.com/imm/videoitem/uniqueidentifier	dc:title	Curious George	xsd:string
http://www.microsoft.com/imm/videoitem/uniqueidentifier	dc:description	Will Ferrell stars as the [...]	xsd:string
http://www.microsoft.com/imm/videoitem/uniqueidentifier	imm:modifiedBy	redmondlericscho	xsd:string
http://www.microsoft.com/imm/videoitem/uniqueidentifier	dc:modified	2007-06-14T21:15:33	xsd:dateTime
http://www.microsoft.com/imm/videoitem/uniqueidentifier	imm:posterFrame	http://www.microsoft.com/imm/thumbnail/uniqueidentifier	rdf:Resource
http://www.microsoft.com/imm/videoitem/uniqueidentifier	imm:thumbnailCollection	http://www.microsoft.com/imm/thumbnail/uniqueidentifier	rdf:Resource
http://www.microsoft.com/imm/videoitem/uniqueidentifier	did:resourceCollection	http://www.microsoft.com/imm/resource/uniqueidentifier1	rdf:Resource
http://www.microsoft.com/imm/videoitem/uniqueidentifier	did:resourceCollection	http://www.microsoft.com/imm/resource/uniqueidentifier2	rdf:Resource
http://www.microsoft.com/imm/videoitem/uniqueidentifier	rdf:type	http://schemas.microsoft.com/imm/core/1.0#VideoItem	rdf:Resource
http://www.microsoft.com/imm/resource/uniqueidentifier1	did:ref	\\san\content\cgVid.wmv	xsd:string
http://www.microsoft.com/imm/resource/uniqueidentifier1	imm:videoFormat	http://www.microsoft.com/imm/videoessenseformat/uniqueidentifier	rdf:Resource
http://www.microsoft.com/imm/resource/uniqueidentifier2	did:ref	\\san\content\cgAud.wma	xsd:string
http://www.microsoft.com/imm/resource/uniqueidentifier2	imm:audioFormat	http://www.microsoft.com/imm/audioessenseformat/uniqueidentifier	rdf:Resource

## REFERENCE

- <http://www.w3.org/TR/rdf-sparql-query/> - W3C, SPARQL Specification
- <http://www.dajobe.org/2005/04-sparql/SPARQLreference-1.8-us.pdf> - Dave Beckett, SPARQL Reference Sheet
- [http://ebiquity.umbc.edu/file\\_directory/resources/94.pdf](http://ebiquity.umbc.edu/file_directory/resources/94.pdf) - Ebiquty Research Group, Semantic Web Reference Card
- <http://www.codeplex.com/imm/> - Interactive Media Manager, Samples and Documentation
- <http://schemas.microsoft.com/imm/core/1.0/> - Interactive Media Manager Core OWL File