

# User Case2 SPARQL EXAMPLES

**(February 2016, version prepared by Geiza M. Hamazaki da Silva and Livia Ruback, Tecgraf Institute/PUC-Rio)**

This document describes the process used to test the EDRC UC2 with answering real SPARQL queries. To enhance that goal, some parts of the EDRC UC2 files (<https://github.com/dpricetq/iso15926>) were adapted and it is available at the directory `edrc_usecase_2` - changed by TecGraf.

Section 1 explains the changes to make to run the SPARQL queries examples. Section 2 shows the local graphs created to store the different parts of the information. Sections 3 brings the SPARQL queries together with its results.

## 1. Changes on the EDRC UC2 files:

- Fixed inconsistency problems related to the templates pointed out on the sections “Problems identified”, document Report EDRC Use Case 2.pdf:
- Prefix of the pca endpoint changed  
from @prefix pcardl: `http://posccaesar.org/rdl/`  
to @prefix pcardl: `<http://data.posccaesar.org/rdl/>`
- Prefix of the tpl endpoint changed  
from @prefix tpl: `<http://data.posccaesar.org/tpl/>`  
to @prefix tpl: `<http://localhost:8089/tpl/>`

## 2. Graphs created:

Prefix	Taken from file	Notes
http://localhost:8089/tecgraph	local graph (stores the pressure equipment request for quote and the response)	
http://localhost:8089/tpl	iso15926-master\standards\pca\data.posccaesar.org_tpl.rdf	<a href="http://data.posccaesar.org/tpl/">http://data.posccaesar.org/tpl/</a> endpoint <b>not</b> available
http://localhost:8089/rdlExtension	iso15926-master\edrc_usecase_2/EDRC_UC2_RDL_Extension_tec.ttl	
http://localhost:8089/emerson	iso15926-master\edrc_usecase_2/Emerson_Catalogue.rdf	


## 3. SPARQL queries executed:

### 3.1) Who the element that the Request For Quotes refer about?

```
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix tpl: <http://localhost:8089/tpl/>
prefix pcardl: <http://data.posccaesar.org/rdl/>
prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

select distinct ?templateInstance ?label ?subClassOfLabel
where {
  # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template
  ?templateInstance rdf:type tpl:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.
  ?templateInstance tpl:hasDefined ?element.
  ?templateInstance tpl:hasDefinition ?aux.
  ?aux rdf:type pcardl:R-a3107083-c97f-458d-aa24-d3785a0a1835. # item of a Request For Quotation
  ?element rdfs:label ?label.
  ?element rdfs:subClassOf ?subClassOf.

  # accessing the posccaesar endpoint to get the label of the cost resource
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?subClassOf rdfs:label ?subClassOfLabel.
  }
}
```



[Interactive SQL \(ISQL\)](#)  
[WebDAV Browser](#)  
[Virtuoso Start Menu](#)  
  
[Documentation \(web\)](#)  
[Tutorials \(web\)](#)  
  
[Virtuoso Web Site](#)  
[OpenLink Software](#)  
  
 Version: 07.20.3214  
 Build: Jun 24 2015

[Home](#)
[System Admin](#)
[Database](#)
[Replication](#)
[Web Application Server](#)
[XML](#)
[Web Services](#)
[Linked Data](#)
[NNTP](#)

[SPARQL](#)
[Sponger](#)
[Statistics](#)
[Graphs](#)
[Schemas](#)
[Namespaces](#)
[Views](#)
[Quad Store Upload](#)

## SPARQL Execution

[Query](#)
[Saved Queries](#)

Default Graph IRI

Query
 

```

prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix tpl: <http://localhost:8089/tpl/>
prefix pcardl: <http://data.posccaesar.org/rdl/>
prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

select distinct ?templateInstance ?label ?subClassOfLabel
where {
  # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template
  ?templateInstance rdf:type tpl:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.
  ?templateInstance tpl:hasDefined ?element.
  ?templateInstance tpl:hasDefinition ?aux.
  ?aux rdf:type pcardl:R-a3107083-c97f-458d-aa24-d3785a0a1835. # item of a Request For Quotation

  ?element rdfs:label ?label.
  ?element rdfs:subClassOf ?subClassOf.
  # accessing the posccaesar endpoint to get the label of the cost resource
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?subClassOf rdfs:label ?subClassOfLabel.
  }
}
      
```

[Execute](#)
[Save](#)
[Load](#)
[Clear](#)

templateInstance	label	subClassOfLabel
<a href="http://example.org/data/TestData1#idf2ad1e4e-7061-4a6a-867a-91f8e023a65b">http://example.org/data/TestData1#idf2ad1e4e-7061-4a6a-867a-91f8e023a65b</a>	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#id270db88f-1213-4dca-93b4-17f011a5160e">http://example.org/data/TestData10#id270db88f-1213-4dca-93b4-17f011a5160e</a>	"CO_R420-PT-6505"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#id63bf4b37-3388-4b42-a0f0-d8b1bc006f07">http://example.org/data/TestData10#id63bf4b37-3388-4b42-a0f0-d8b1bc006f07</a>	"CO_R420-PT-6502"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#idafe14c59-b53d-43d3-a985-1a2d64818591">http://example.org/data/TestData10#idafe14c59-b53d-43d3-a985-1a2d64818591</a>	"CO_R420-PT-6501"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#id82bc52cf-8dcf-4347-90ed-9233b8932434">http://example.org/data/TestData10#id82bc52cf-8dcf-4347-90ed-9233b8932434</a>	"CO_R420-PT-6504"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#id0d507efd-3291-4ef3-abcf-45afea0bd2e2">http://example.org/data/TestData10#id0d507efd-3291-4ef3-abcf-45afea0bd2e2</a>	"CO_R420-PT-5153"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#id1212914d-eac8-44ba-ba62-d56fd44e62cf">http://example.org/data/TestData10#id1212914d-eac8-44ba-ba62-d56fd44e62cf</a>	"CO_R420-PT-6503"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#ide67d305a-adf4-4421-a92d-1c7ce5564dcf">http://example.org/data/TestData10#ide67d305a-adf4-4421-a92d-1c7ce5564dcf</a>	"CO_R420-PT-5155"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#id4151d0df-f557-43ae-887a-451cc4c4f5bb">http://example.org/data/TestData10#id4151d0df-f557-43ae-887a-451cc4c4f5bb</a>	"CO_R420-PT-5154"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#id057ceff9-8b74-442c-b666-ed8c2a53a90f">http://example.org/data/TestData10#id057ceff9-8b74-442c-b666-ed8c2a53a90f</a>	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"
<a href="http://example.org/data/TestData10#idea123a35-fe19-4fc4-ab8a-f7418883144a">http://example.org/data/TestData10#idea123a35-fe19-4fc4-ab8a-f7418883144a</a>	"CO_R420-PT-5156"	"PRESSURE TRANSMITTER"

Figure 1: Result of the Request For Quotation query

## 3.2) What are the parts of the Pressure Equipment?

```
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix tpl: <http://localhost:8089/tpl/>
prefix pcardl: <http://data.posccaesar.org/rdl/>
prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

select distinct ?rfqItem ?labelEquipment ?subClassOfLabel ?partSubClassOfLabel
where {
  # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template
  ?templateInstance rdf:type tpl:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.
  ?templateInstance tpl:hasDefinition ?rfqItem.
  ?rfqItem rdf:type pcardl:R-a3107083-c97f-458d-aa24-d3785a0a1835.
  ?templateInstance tpl:hasDefined ?equipment.
  ?equipment rdfs:label ?labelEquipment.
  ?equipment rdfs:subClassOf ?subClassOfLabel.
  # accessing the posccaesar endpoint to get the label of the equipment resource
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?subClassOf rdfs:label ?subClassOfLabel.
  }

  # Relations from ClassOfAssemblyDefinition template
  ?templateInstance2 tpl:hasClassOfWhole ?equipment.
  ?templateInstance2 rdf:type tpl:ClassOfAssemblyDefinition.
  ?templateInstance2 tpl:hasClassOfPart ?part.
  ?part rdfs:subClassOf ?partSubClassOfLabel.
  # accessing the posccaesar endpoint to get the label of the part
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?partSubClassOf rdfs:label ?partSubClassOfLabel.
  }
}
```

```
select distinct ?rfqItem ?labelEquipment ?subClassOfLabel ?partSubClassOfLabel
where {
  # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template
  ?templateInstance rdf:type tpl:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.
  ?templateInstance tpl:hasDefinition ?rfqItem.
  ?rfqItem rdf:type pcardl:R-a3107083-c97f-458d-aa24-d3785a0a1835.
  ?templateInstance tpl:hasDefined ?equipment.
  ?equipment rdfs:label ?labelEquipment.
  ?equipment rdfs:subClassOf ?subClassOfLabel.
  # accessing the posccaesar endpoint to get the label of the equipment resource
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?subClassOf rdfs:label ?subClassOfLabel.
  }

  # Relations from ClassOfAssemblyDefinition template
  ?templateInstance2 tpl:hasClassOfWhole ?equipment.
  ?templateInstance2 rdf:type tpl:ClassOfAssemblyDefinition.
  ?templateInstance2 tpl:hasClassOfPart ?part.
  ?part rdfs:subClassOf ?partSubClassOfLabel.
  # accessing the posccaesar endpoint to get the label of the part
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?partSubClassOf rdfs:label ?partSubClassOfLabel.
  }
}
```

Execute Save Load Clear

rfqItem	labelEquipment	subClassOfLabel	partSubClassOfLabel
<a href="http://example.org/data/TestData1#id3dd5e9f4-f0ed-4e88-90e8-47cee5deb9c">http://example.org/data/TestData1#id3dd5e9f4-f0ed-4e88-90e8-47cee5deb9c</a>	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData1#id3dd5e9f4-f0ed-4e88-90e8-47cee5deb9c">http://example.org/data/TestData1#id3dd5e9f4-f0ed-4e88-90e8-47cee5deb9c</a>	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#id1f4af87e-a3ac-44d6-b05f-ca737bc2fe11">http://example.org/data/TestData10#id1f4af87e-a3ac-44d6-b05f-ca737bc2fe11</a>	"CO_R420-PT-6505"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#id1f4af87e-a3ac-44d6-b05f-ca737bc2fe11">http://example.org/data/TestData10#id1f4af87e-a3ac-44d6-b05f-ca737bc2fe11</a>	"CO_R420-PT-6505"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#id5ead4ae4-91ee-433f-96f0-19e2dcf8b297">http://example.org/data/TestData10#id5ead4ae4-91ee-433f-96f0-19e2dcf8b297</a>	"CO_R420-PT-6502"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#id5ead4ae4-91ee-433f-96f0-19e2dcf8b297">http://example.org/data/TestData10#id5ead4ae4-91ee-433f-96f0-19e2dcf8b297</a>	"CO_R420-PT-6502"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#id031053e7-eb48-4ab8-b9d4-c881d020ce24">http://example.org/data/TestData10#id031053e7-eb48-4ab8-b9d4-c881d020ce24</a>	"CO_R420-PT-6501"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#id031053e7-eb48-4ab8-b9d4-c881d020ce24">http://example.org/data/TestData10#id031053e7-eb48-4ab8-b9d4-c881d020ce24</a>	"CO_R420-PT-6501"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#id4d72cd5b-b7d2-4649-80f4-d947dc3e2ced">http://example.org/data/TestData10#id4d72cd5b-b7d2-4649-80f4-d947dc3e2ced</a>	"CO_R420-PT-6504"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#id4d72cd5b-b7d2-4649-80f4-d947dc3e2ced">http://example.org/data/TestData10#id4d72cd5b-b7d2-4649-80f4-d947dc3e2ced</a>	"CO_R420-PT-6504"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#id345ed174-9664-4607-9b8d-01e1beec2a58">http://example.org/data/TestData10#id345ed174-9664-4607-9b8d-01e1beec2a58</a>	"CO_R420-PT-5153"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#id345ed174-9664-4607-9b8d-01e1beec2a58">http://example.org/data/TestData10#id345ed174-9664-4607-9b8d-01e1beec2a58</a>	"CO_R420-PT-5153"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#id3b2b470-de7a-4d91-b8a7-0486d911373e">http://example.org/data/TestData10#id3b2b470-de7a-4d91-b8a7-0486d911373e</a>	"CO_R420-PT-6503"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#id3b2b470-de7a-4d91-b8a7-0486d911373e">http://example.org/data/TestData10#id3b2b470-de7a-4d91-b8a7-0486d911373e</a>	"CO_R420-PT-6503"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#id276c3308-6c90-4952-83e7-401783bc0d2a">http://example.org/data/TestData10#id276c3308-6c90-4952-83e7-401783bc0d2a</a>	"CO_R420-PT-5155"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#id276c3308-6c90-4952-83e7-401783bc0d2a">http://example.org/data/TestData10#id276c3308-6c90-4952-83e7-401783bc0d2a</a>	"CO_R420-PT-5155"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#idb178fdd9-6b1e-4cf3-a0f7-cea3ecdd59d7">http://example.org/data/TestData10#idb178fdd9-6b1e-4cf3-a0f7-cea3ecdd59d7</a>	"CO_R420-PT-5154"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#idb178fdd9-6b1e-4cf3-a0f7-cea3ecdd59d7">http://example.org/data/TestData10#idb178fdd9-6b1e-4cf3-a0f7-cea3ecdd59d7</a>	"CO_R420-PT-5154"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#idfdd27c5c8-d9b5-4cbd-88c6-92a8abeef820">http://example.org/data/TestData10#idfdd27c5c8-d9b5-4cbd-88c6-92a8abeef820</a>	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"	"HOUSING"
<a href="http://example.org/data/TestData10#idfdd27c5c8-d9b5-4cbd-88c6-92a8abeef820">http://example.org/data/TestData10#idfdd27c5c8-d9b5-4cbd-88c6-92a8abeef820</a>	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#ida11da807-4f22-4aa1-97c9-86d018a2d960">http://example.org/data/TestData10#ida11da807-4f22-4aa1-97c9-86d018a2d960</a>	"CO_R420-PT-5156"	"PRESSURE TRANSMITTER"	"PRESSURE ELEMENT"
<a href="http://example.org/data/TestData10#ida11da807-4f22-4aa1-97c9-86d018a2d960">http://example.org/data/TestData10#ida11da807-4f22-4aa1-97c9-86d018a2d960</a>	"CO_R420-PT-5156"	"PRESSURE TRANSMITTER"	"HOUSING"

Figure 2: Result of the Pressure Equipment parts

### 3.3) What are the Calibration Ranges for the Pressure Equipment ordered?

```
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix tpl: <http://localhost:8089/tpl/>
prefix pcardl: <http://data.posccaesar.org/rdl/>
prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

select distinct ?rfqItem ?labelEquipment ?subClassOfLabel ?subClassOfscale ?lowerBound ?upperBound
where {
  # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template
  ?templateInstance rdf:type tpl:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.
  ?templateInstance tpl:hasDefinition ?rfqItem.
  ?rfqItem rdf:type pcardl:R-a3107083-c97f-458d-aa24-d3785a0a1835.
  ?templateInstance tpl:hasDefined ?equipment.
  ?equipment rdfs:label ?labelEquipment.
  ?equipment rdfs:subClassOf ?subClassOf.
  # accessing the posccaesar endpoint to get the label of the equipment resource
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?subClassOf rdfs:label ?subClassOfLabel.
  }
  # Relations from ClassOfIndividualHasIndirectPropertyWithBoundingValues template
  ?templateInstance2 rdf:type tpl:ClassOfIndividualHasIndirectPropertyWithBoundingValues.
  ?templateInstance2 tpl:hasPossessorType ?equipment.
  ?templateInstance2 tpl:hasScale ?scale.
  # accessing the posccaesar endpoint to get the label of the scale
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?scale rdfs:label ?subClassOfscale.
  }
  ?templateInstance2 tpl:valLowerBound ?lowerBound.
  ?templateInstance2 tpl:valUpperBound ?upperBound.
}
```

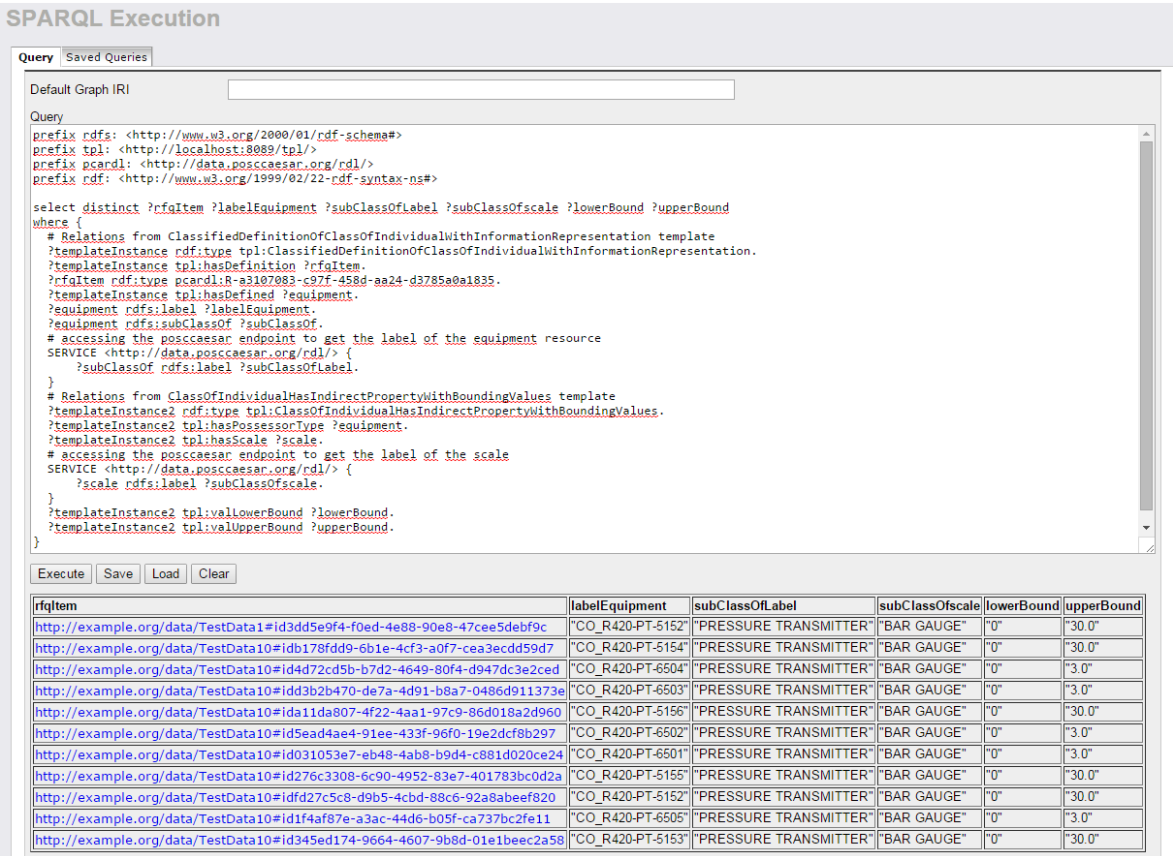


Figure 3 Result of the pressure equipment calibration ranges

### 3.4) What are the Normal Operating Pressure and Normal Operating Temperature of the Pressure Transmitter requested?

```
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix tpl: <http://localhost:8089/tpl/>
prefix pcardl: <http://data.posccaesar.org/rdl/>
prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

select distinct ?rfqItem ?labelEquipment ?subClassOfLabel ?tempValue ?pressValue
where {
  # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template
  ?templateInstance rdf:type tpl:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.
  ?templateInstance tpl:hasDefinition ?rfqItem.
  ?rfqItem rdf:type pcardl:R-a3107083-c97f-458d-aa24-d3785a0a1835.
  ?templateInstance tpl:hasDefined ?equipment.
  ?equipment rdfs:label ?labelEquipment.
  ?equipment rdfs:subClassOf ?subClassOf.
  # accessing the posccaesar endpoint to get the label of the equipment resource
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?subClassOf rdfs:label ?subClassOfLabel.
  }

  # Relations from ClassOfContainmentDefinition template
  ?templateInstance2 rdf:type tpl:ClassOfContainmentDefinition.
  ?templateInstance2 tpl:hasClassOfContainer ?equipment.
  ?templateInstance2 tpl:hasClassOfContained ?stream.

  # Relations from ClassOfIndividualHasIndirectPropertyWithValue template
  ?templateInstance3 rdf:type tpl:ClassOfIndividualHasIndirectPropertyWithValue.
  ?templateInstance3 tpl:hasPossessorType ?stream.
  ?templateInstance3 tpl:hasScale pcardl:RDS1322684.
  # ensures that ?templateInstance3 has the DEGREE CELSIUS scale, i.e., it is a temperature
  ?templateInstance3 tpl:valPropertyValue ?tempValue.

  ?templateInstance4 rdf:type tpl:ClassOfIndividualHasIndirectPropertyWithValue.
  ?templateInstance4 tpl:hasPossessorType ?stream.
  ?templateInstance4 tpl:hasScale pcardl:RDS1348874.
  # ensures that ?templateInstance4 has the BAR GAUGE scale, i.e., it is a pressure
  ?templateInstance4 tpl:valPropertyValue ?pressValue.
}
```

<pre> Query select distinct ?rfqItem ?labelEquipment ?subClassOfLabel ?tempValue ?pressValue where {   # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template   ?templateInstance rdf:type tpl:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.   ?templateInstance tpl:hasDefinition ?rfqItem.   ?rfqItem rdf:type pcardl:R-a3107083-c97f-458d-aa24-d3785a0a1835.   ?templateInstance tpl:hasDefined ?equipment.   ?equipment rdfs:label ?labelEquipment.   ?equipment rdfs:subClassOf ?subClassOf.   # accessing the posccaesar endpoint to get the label of the equipment resource   SERVICE &lt;http://data.posccaesar.org/rd1/&gt; {     ?subClassOf rdfs:label ?subClassOfLabel.   }    # Relations from ClassOfContainmentDefinition template   ?templateInstance2 rdf:type tpl:ClassOfContainmentDefinition.   ?templateInstance2 tpl:hasClassOfContainer ?equipment.   ?templateInstance2 tpl:hasClassOfContained ?stream.    # Relations from ClassOfIndividualHasIndirectPropertyWithValue template   ?templateInstance3 rdf:type tpl:ClassOfIndividualHasIndirectPropertyWithValue.   ?templateInstance3 tpl:hasPossessorType ?stream.   ?templateInstance3 tpl:hasScale pcardl:RDS1322684.   # ensures that ?templateInstance3 has the DEGREE CELSIUS scale, i.e., it is a temperature   ?templateInstance3 tpl:valPropertyValue ?tempValue.    ?templateInstance4 rdf:type tpl:ClassOfIndividualHasIndirectPropertyWithValue.   ?templateInstance4 tpl:hasPossessorType ?stream.   ?templateInstance4 tpl:hasScale pcardl:RDS1348874.   # ensures that ?templateInstance4 has the BAR GAUGE scale, i.e., it is a pressure   ?templateInstance4 tpl:valPropertyValue ?pressValue. } </pre>				
Execute	Save	Load	Clear	
rfqItem	labelEquipment	subClassOfLabel	tempValue	pressValue
http://example.org/data/TestData1#id3dd5e9f4-f0ed-4e88-90e8-47cee5deb9c	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"	"95.0"	"19.2"
http://example.org/data/TestData10#id5ead4ae4-91ee-433f-96f0-19e2dcf8b297	"CO_R420-PT-6502"	"PRESSURE TRANSMITTER"	"46.0"	"2.0"
http://example.org/data/TestData1#id3dd5e9f4-f0ed-4e88-90e8-47cee5deb9c	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"	"95.0"	"10"
http://example.org/data/TestData10#id345ed174-9664-4607-9b8d-01e1beec2a58	"CO_R420-PT-5153"	"PRESSURE TRANSMITTER"	"95.0"	"19.2"
http://example.org/data/TestData10#ida11da807-4f22-4aa1-97c9-86d018a2d960	"CO_R420-PT-5156"	"PRESSURE TRANSMITTER"	"95.0"	"19.2"
http://example.org/data/TestData10#idf4d27c5c8-d9b5-4cbd-88c6-92a8abee820	"CO_R420-PT-5152"	"PRESSURE TRANSMITTER"	"95.0"	"19.2"
http://example.org/data/TestData10#idd3b2b470-de7a-4d91-b8a7-0486d911373e	"CO_R420-PT-6503"	"PRESSURE TRANSMITTER"	"46.0"	"2.0"
http://example.org/data/TestData10#idb178fdd9-6b1e-4cf3-a0f7-cea3ecdd59d7	"CO_R420-PT-5154"	"PRESSURE TRANSMITTER"	"95.0"	"19.2"
http://example.org/data/TestData10#id276c3308-6c90-4952-83e7-401783bc0d2a	"CO_R420-PT-5155"	"PRESSURE TRANSMITTER"	"95.0"	"19.2"
http://example.org/data/TestData10#id4d72cd5b-b7d2-4649-80f4-d947dc3e2ced	"CO_R420-PT-6504"	"PRESSURE TRANSMITTER"	"46.0"	"2.0"
http://example.org/data/TestData10#id1f4af87e-a3ac-44d6-b05f-ca737bc2fe11	"CO_R420-PT-6505"	"PRESSURE TRANSMITTER"	"46.0"	"2.0"
http://example.org/data/TestData10#id031053e7-eb48-4ab8-b9d4-c881d020ce24	"CO_R420-PT-6501"	"PRESSURE TRANSMITTER"	"46.0"	"2.0"

Figure 4: Result for the normal operating pressure and the normal operating temperature requested

#### Notes:

The SPARQL query result shows 2 instances for the TestData1 (that contains only one request for quote at the pressure\_transmitter\_rfq\_1.ttl file and its response). These 2 instances have different pressure values (19.2 and 10), i.e., the same request for quotation element have different values of pressure in the two files (request and reply).

On the other side, we can see more 10 instances for to the TestData10 (that contains 10 requests for quotes at the pressure\_transmitter\_rfq\_10.ttl file and its response). The pressure and temperature values for all instances match on the request and the reply files.

### 3.5) Response of the RFQ:

**“What are the cost (currency, cost type and value) of the equipment ordered?”**

```
prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix tpl: <http://localhost:8089/tpl/>
prefix pcardl: <http://data.posccaesar.org/rdl/>
prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

select ?labelEquipment ?currencyLabel ?productName ?productClassLabel ?costTypeLabel ?value

FROM <http://localhost:8089/tecgraph> # local graph with the 4 pressure transmitter ttl files
FROM <http://localhost:8089/emerson> # local graph copied from edrc_usecase_2/Emerson_Catalogue.rdf
FROM <http://localhost:8089/rdlExtension> # local graph copied from edrc_usecase_2/EDRC_UC2_RDL_Extension.ttl

where {
  # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template
  ?templateInstance rdf:type tpl:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.
  ?templateInstance tpl:hasDefinition ?item.
  ?item rdf:type pcardl:R-bd9e51e1-7182-421d-887e-e5cb37e34653.
  ?templateInstance tpl:hasDefined ?equipment.
  ?equipment rdfs:label ?labelEquipment.

  # Relations from ProductClassFulfilClassOfFunctionPlace template
  ?productClassInstance tpl:hasFunctionPlaceClass ?element.
  ?productClassInstance rdf:type tpl:ProductClassFulfilClassOfFunctionPlace.
  ?productClassInstance tpl:hasProductClass ?product.
  ?product rdfs:label ?productName.
  ?product rdf:type ?productClass.
  ?productClass rdfs:label ?productClassLabel.

  # Relations from ClassOfIndividualHasMonetaryValue template
  ?monetaryValueInstance tpl:hasPossessorType ?product.
  ?monetaryValueInstance rdf:type tpl:ClassOfIndividualHasMonetaryValue.
  ?monetaryValueInstance tpl:hasCurrency ?currency.
  # the currencyLabel is stored on the emerson local graph
  ?currency rdfs:label ?currencyLabel.
  ?monetaryValueInstance tpl:hasCostType ?costType.
  # accessing the posccaesar endpoint to get the label of the cost resource
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?costType rdfs:label ?costTypeLabel.
  }
  ?monetaryValueInstance tpl:valPropertyValue ?value.
}
```



Interactive SQL (ISQL)  
WebDAV Browser  
Virtuoso Start Menu

Documentation (web)  
Tutorials (web)

Virtuoso Web Site  
OpenLink Software

Version: 07.20.3214  
Build: Jun 24 2015

Home
System Admin
Database
Replication
Web Application Server
XML
Web Services
Linked Data
NNTP

SPARQL
Sponger
Statistics
Graphs
Schemas
Namespaces
Views
Quad Store Upload

## SPARQL Execution

Query
Saved Queries

Default Graph IRI

Query

```

prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#>
prefix tpi: <http://localhost:8089/tpi/>
prefix pcardl: <http://data.posccaesar.org/rdl/>
prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

select ?labelEquipment ?productName ?productClassLabel ?currencyLabel ?costTypeLabel ?value

FROM <http://localhost:8089/tecgraph> # local graph with the 4 pressure transmitter ttl files
FROM <http://localhost:8089/emerson> # local graph copied from edrc_usecase_2/Emerson_Catalogue.rdf
FROM <http://localhost:8089/rdlExtension> # local graph copied from edrc_usecase_2/EDRC_UC2_RDL_Extension.ttl

where {
  # Relations from ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation template
  ?templateInstance rdf:type tpi:ClassifiedDefinitionOfClassOfIndividualWithInformationRepresentation.
  ?templateInstance tpi:hasDefinition ?item.
  ?item rdf:type pcardl:R-bd9e51e1-7182-421d-887e-e5cb37e34653.
  ?templateInstance tpi:hasDefined ?equipment.
  ?equipment rdfs:label ?labelEquipment.

  # Relations from ProductClassFulfillsClassOfFunctionPlace template
  ?productClassInstance tpi:hasFunctionPlaceClass ?element.
  ?productClassInstance rdf:type tpi:ProductClassFulfillsClassOfFunctionPlace.
  ?productClassInstance tpi:hasProductClass ?product.
  ?product rdfs:label ?productName.
  ?product rdf:type ?productClass.
  ?productClass rdfs:label ?productClassLabel.

  # Relations from ClassOfIndividualHasMonetaryValue template
  ?monetaryValueInstance tpi:hasPossessorType ?product.
  ?monetaryValueInstance rdf:type tpi:ClassOfIndividualHasMonetaryValue.
  ?monetaryValueInstance tpi:hasCurrency ?currency.
  # the currencyLabel is stored on the emerson local graph
  ?currency rdfs:label ?currencyLabel.
  ?monetaryValueInstance tpi:hasCostType ?costType.
  # accessing the posccaesar endpoint to get the label of the cost resource
  SERVICE <http://data.posccaesar.org/rdl/> {
    ?costType rdfs:label ?costTypeLabel.
  }
  ?monetaryValueInstance tpi:valPropertyValue ?value.
}

```

Execute Save Load Clear

labelEquipment	productName	productClassLabel	currencyLabel	costTypeLabel	value
CO_R420-PT-5152	2051TG2A2B21BE1	EMERSON EQUIPMENT CLASS	USD	STANDARD PRICE	1715.0

Figure 5: Result for the query about the cost of the equipment ordered