• Overview of Design

i. Description of Application Query Interface

We used Apache Fuseki Jena as SPARQL query interface and React-based UI. We are using Endpoint API provided to connect <How frontend is working>. And all data is fetched from turtle file generated by JUMA mapping.

ii. Description of Queries

We made 10 SPARQL queries using dataset “Sports and Recreation Clubs”, “Multi Use Community Centres” and “Accessible Parking Spaces”.

Based on datasets “Sports and Recreation Clubs” and “Multi Use Community Centres”, we can find:

* SDCC (South Dublin City Council) owned Sports and Recreation Clubs Multi Use Community Centres
* Names of Sports and Recreation Clubs & Multi-Use Community Centres present In DUBLIN 12
* Availability Meeting rooms to use in Sports and Recreation Clubs & Multi-Use Community Centres
* Counts of Sports and Recreation Clubs & Multi-Use Community centres were created by Community and ESRI
* Availability of coffee docks in Sports and Recreation Clubs & Multi-Use Community Centres.
* Disability accessible Sports and Recreation Clubs & Multi-Use
* Community Centres in Dublin 16

Based on datasets “Sports and Recreation Clubs” and “Accessible Parking Spaces”, we are able to find:

* The parking areas available near a Sports and Recreation Club within given distance
* The different kinds of Space-type available for parking near a Sports and Recreation Club and their counts.
* The Sports and Recreation Clubs & Multi-Use Community Centres that don’t have website information
* The details of nearest parking area available near a Sports and Recreation Club and the number of available parking spaces.

For above queries we used -  group by, aggregation and some mathematics calculation.

• Discussion of challenges faced while ontology modelling or creating queries and mappings

Challenges faced while ontology modelling :

* How to decide  and differentiate classes  from properties  and map them from dataset into JUMA
* We tried to use existing ontology/classes, but we were able to map them completely. So reusing existing ontology was challenging.

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Challenges faced while creating queries:

* Finding SPARQL queries which can combine more than one dataset.
* We tried to include Geo SPARQL queries but did work with Fuseki.
* We found less  documentation to write or refer SPARQL queries.
* For SPARQL query to find distance, finding math function and its implementation was tough task.
* We faced many situations of empty nodes/subject, and we were not able to handle those in SPARQL queries.
* Finding resources on - how different data types of SPARQL really work.
* Setting a column label to different string value in SPARQL query.

Challenges faced while mapping data using JUMA

* JUMA downtime was very frequent while we were working on Mapping.
* There is no method of JUMA configuration to reuse or duplicate

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• Conclusions: Self reflection of group on Strengths/weakness of ontology model, queries &

Interface

Ontology we created is based on Datasets related to location and places which are complete in nature, as they contained longitude and latitude to represent a location. Even dataset contain other required features that helped to make a meaningful ontology. SPARQL queries we used are very specific to use cases and there are many other that can be triggered on uplifted data. Considering dataset is still valid, our ontology can be utilized to find parking spaces and places in south Dublin. For specific information like distance between two places is also available through SPARQL query.

Furthermore, we tried to reuse existing ontologies available but we were unable to find any proper mapping to our dataset. We used distance calculation because we were not able to implement geo sparql query on our dataset

4. Self-reflection