KGE 2024

Student life

in Trento

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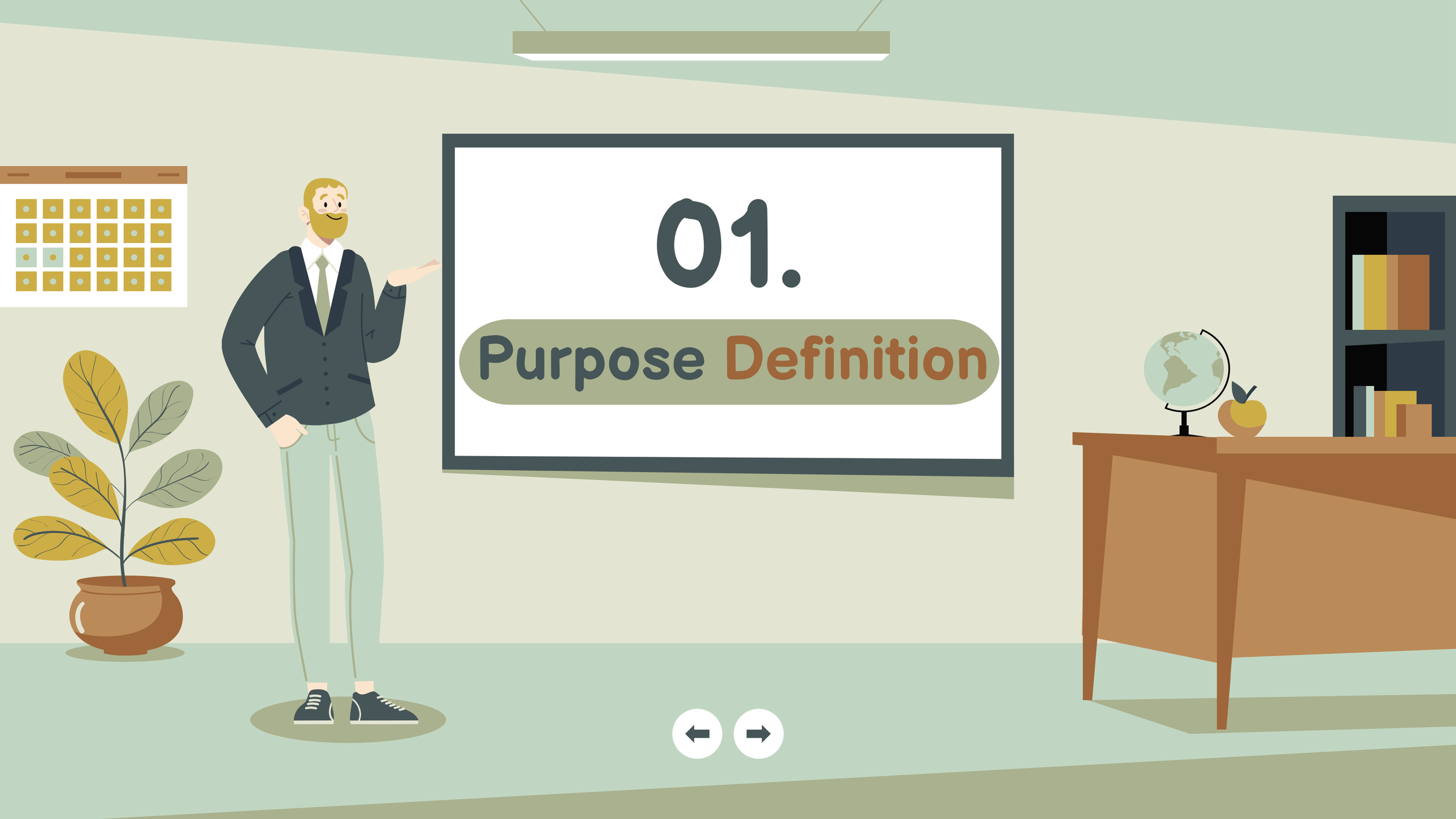

01.
Purpose Definition

Student life in Trento - Purpose

Planning

Discovering

Personas & Scenarios

Alessia

Social Interaction Scenario

Paolo

University Facilities Scenario

Lucia

Dinner Place Scenario

Houda

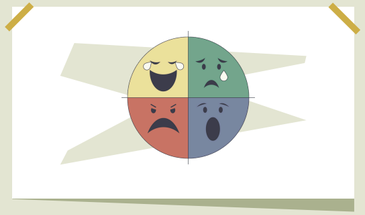
Daily Life Scenario

Emanuele

Personal Activity Scenario

Transport

CQ1 - P1 - S1
Is public transport available to reach the destination?



Sentiment

CQ4 - P2 - S2
Which university facility best fits the student's needs or has the least impact on their mood?

Discovery

CQ11 - P5 - S5
Which sports facility is closest to the student?

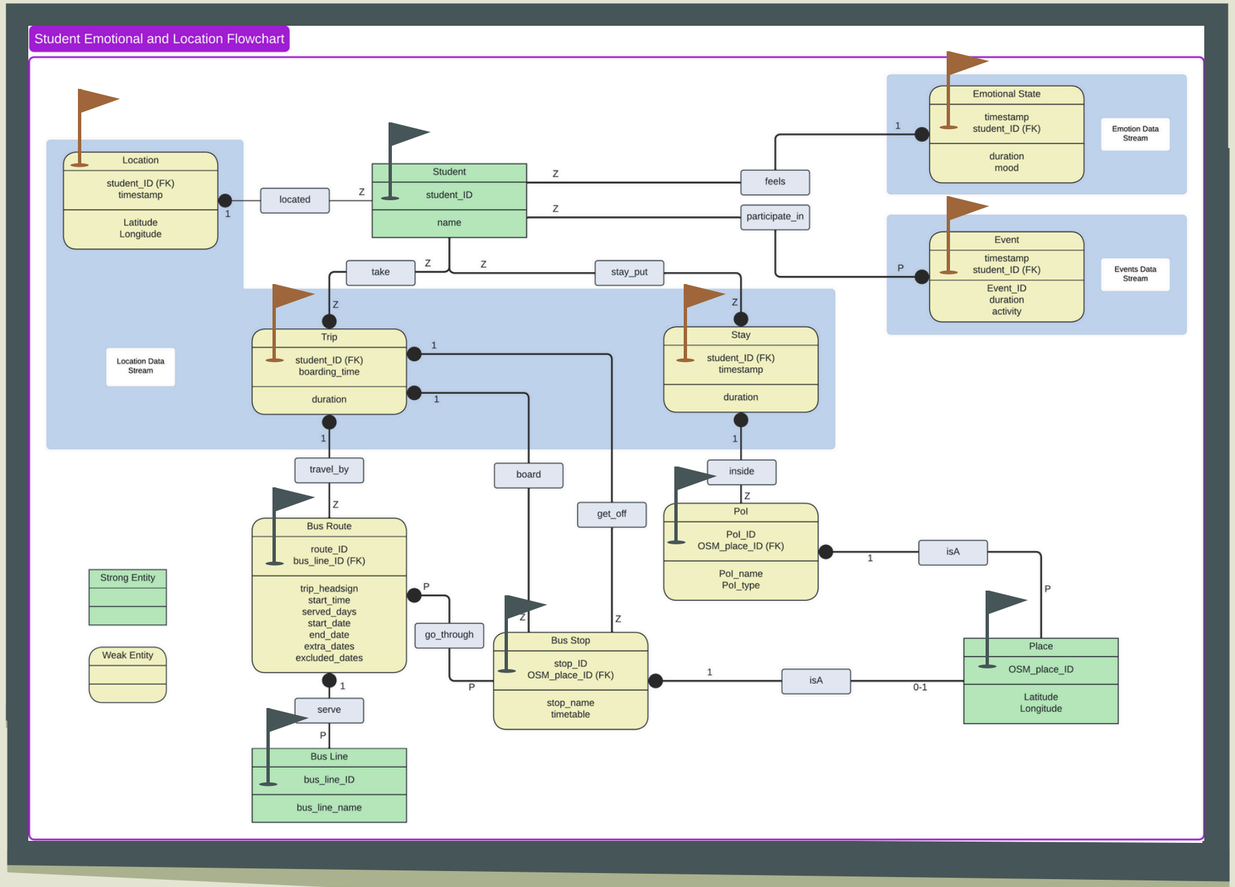
Entities & ER model

Streams

Encode information information grounded in the time dimension

Static Entities

Encode information information for mostly immutable entities in our application domain



02.

Information Gathering

Data sources

SmartUnitn2

Student location | Mood | Activity

Trentino Trasporti

Bus routes | Bus stops | Bur lines

Point of Interest in Trentino

Places | Buildings

Open Street Map

University Facilities

Data source / Information Souce

Stream dataset

- user_location
- user_stays
- user_likely_trips
- mood_stream
- activity_stream

Static dataset

- user_ids
- poi_and_osm
- bus_stops
- bus_routes
- bus_trips

03.

Language Definition

Concept Identification

UKC

Entity types — **student_UKC-53021**

core types of the entities

Data properties — **timetable_UKC-34211**

attributes of entities

Object properties — **participate_in_UKC-97811**

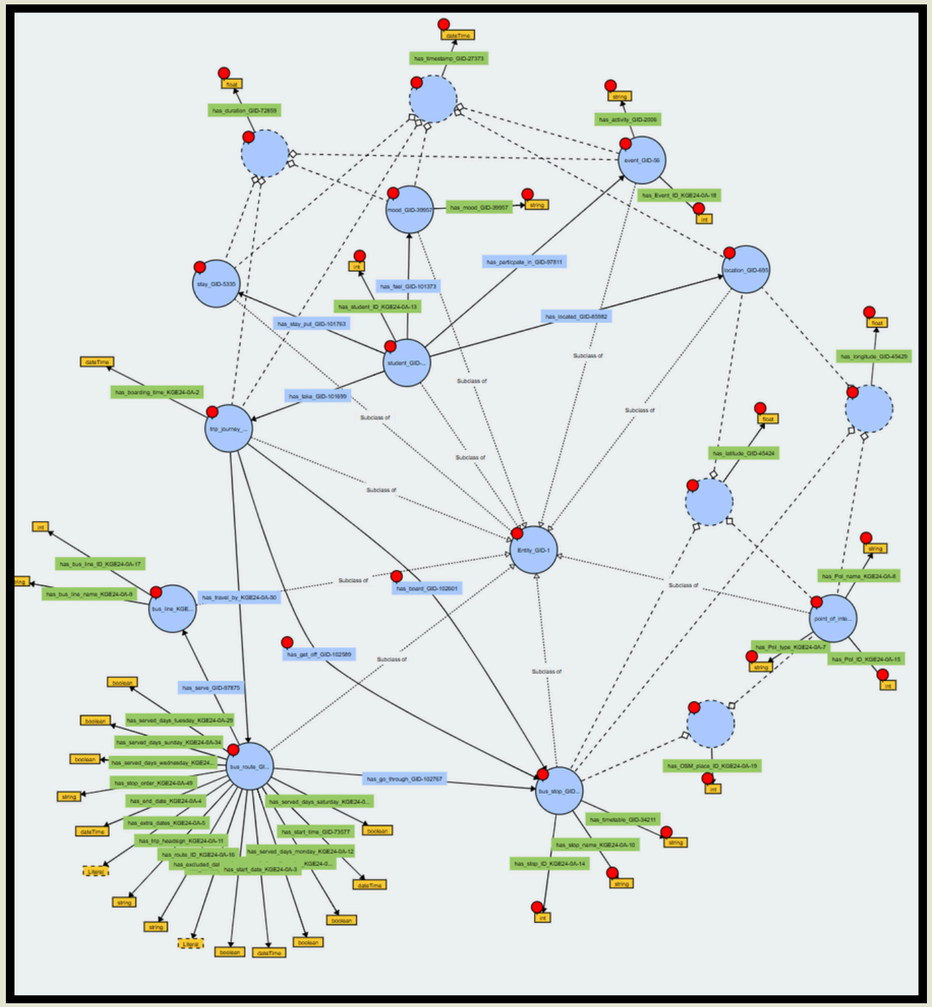
source entity - target entity

Data property values — **stationery_shop_KGE24-0A-42**


04.
Knowledge Definition

Teleontology & Teleology

- owl:Thing
  - gtfs:Route
    - etype:bus_line_KGE24-0A-1
  - gtfs:Stop
    - etype:bus_stop_GID-45118
  - gtfs:Trip
    - etype:bus_route_GID-45117
  - OSM_LW:OSM place
    - etype:bus_stop_GID-45118
    - OSM_LW:OSM point place
      - OSM_LW:poisPoint
        - etype:point_of_interest_KGE24-0A-20
  - schema:Thing
    - schema:Action
      - etype:stay_GID-5335
      - schema:AssessAction
        - schema:ReactAction
          - etype:mood_GID-39957
      - schema:MoveAction
        - schema:TravelAction
          - etype:trip_journey_GID-1474
    - schema:Event
      - etype:event_GID-56
    - schema:Person
      - etype:student_GID-53021
    - schema:Place
      - etype:location_GID-695

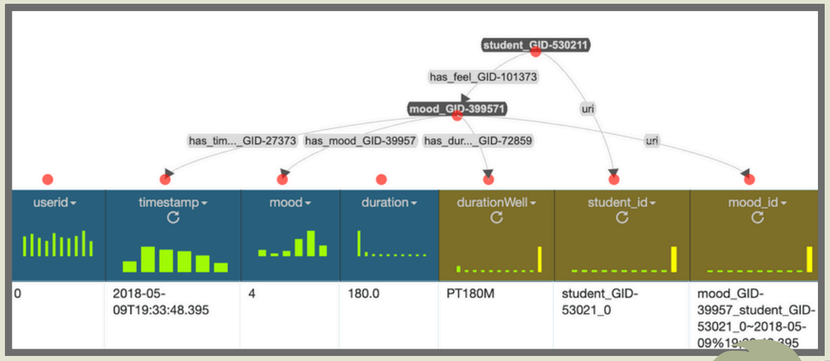



05.
Entity Definition

Entity Definition

Entity matching

middle-out approach



Entity Identifying

entity URI

Entity Mapping

mapping models + data values => KGs


06.
Evaluation

Knowledge Layer

Teleontology vs CQs

EType level

CovE(CQe) = 10/10

Property level

CovE(CQe) = 33/33

Teleontology vs ROs

EType level

CovE(ROe) = 10/843

Property level

CovE(ROe) = 33 / ∞

Data Layer

Number of Entities

etype	entityCount
event_GID-56	45283
student_GID-53021	149
bus_line_KGE24-0A-1	41
bus_stop_GID-45118	1034
bus_route_GID-45117	2934
mood_GID-39957	23117
point_of_interest_KGE24-0A-20	2903
stay_GID-5335	3684
trip_journey_GID-1474	138
location_GID-695	3127734

Entity connectivity

etype	Entity Connectivity
event_GID-56	ND
student_GID-53021	639991.2
bus_line_KGE24-0A-1	ND
bus_stop_GID-45118	ND
bus_route_GID-45117	537.5
mood_GID-39957	ND
point_of_interest_KGE24-0A-20	ND
stay_GID-5335	182
trip_journey_GID-1474	70.67
location_GID-695	ND

Property connectivity

etype	Property Connectivity
event_GID-56	45283
bus_line_KGE24-0A-1	41
bus_stop_GID-45118	1034
bus_route_GID-45117	2935.36
mood_GID-39957	23117
point_of_interest_KGE24-0A-20	2914.8
stay_GID-5335	3684
trip_journey_GID-1474	138
location_GID-695	3127734

etype	Student Connectivity	% of entities reached
event_GID-56	45283	100%
mood_GID-39957	23117	100%
stay_GID-5335	3684	100%
trip_journey_GID-1474	138	100%
location_GID-695	3127734	100%
point_of_interest_KGE24-0A-20	182	6.27%
bus_stop_GID-45118	82	7.93%
bus_route_GID-45117	112	3.81%
bus_line_KGE24-0A-1	20	48.78%

Exploitation of Final KG

Sentiment - CQ 4

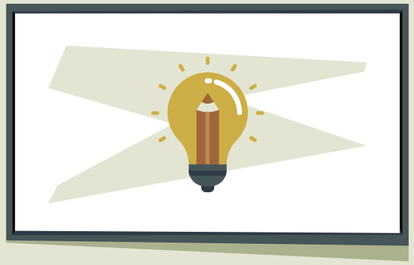
```
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX e: <http://knowdive.disi.unitn.it/etype#>

#Which facility best fits the student's needs or has the least impact on their mood?

SELECT DISTINCT ?poiName ?poiType (AVG(?moodValue) AS ?moodInFacility)
WHERE {
 {
  # GET THE POI WE WANT
  {
   SELECT ?poi ?poiName ?poiType
   WHERE{
    VALUES ?types { "biblioteca" "university" "Biblioteca" "library" }
    ?poi a e:point_of_interest_KGE24-0A-20;
     e:has_PoI_name_KGE24-0A-8 ?poiName;
     e:has_PoI_type_KGE24-0A-7 ?poiType.
    FILTER(LCASE(?poiType) = LCASE(?types))
   }
  }

  # GET THE STAYS FOR THE STUDENT
  {
   SELECT ?stay
   WHERE{
    BIND(<http://localhost:8080/source/student_GID-53021_55> AS ?user)
    ?user e:has_stay_put_GID-101763 ?stay.
   }
  }
  ?stay e:has_inside_GID-106969 ?poi;
   e:has_timestamp_GID-27373 ?stayStartTime;
   e:has_duration_GID-72859 ?stayDuration .
  BIND(?stayStartTime + ?stayDuration AS ?stayEndTime)

  # GET THE MOODS OF THE STUDENT AROUND THE
  {
   SELECT ?mood ?moodValue ?moodStartTime ?moodEndTime
   WHERE {
    BIND(<http://localhost:8080/source/student_GID-53021_55> AS ?user)

    ?user e:has_feel_GID-101373 ?mood.

    ?mood e:has_mood_GID-39957 ?moodVal ;
     e:has_timestamp_GID-27373 ?moodStartTime ;
     e:has_duration_GID-72859 ?moodDuration .
    BIND(xsd:float(?moodVal) AS ?moodValue)
    BIND(?moodStartTime + ?moodDuration AS ?moodEndTime)

    FILTER(?moodValue > 0)
   }
  }
  # SELECT THE MOODS ACCORDING TO STAY
  FILTER(
   ((?moodStartTime <= ?stayEndTime) && (?moodEndTime >= ?stayStartTime))
  )
 }
}
GROUP BY ?poiName ?poiType
ORDER BY DESC(?moodInFacility)
```

	poiName	poiType	moodInFacility
1	"Bup - Biblioteca Universitaria Povo"	"library"	"4.714286"^^xsd:float
2	"Povo 2, Dipartimento Di Ingegneria Industriale"	"university"	"4.5"^^xsd:float
3	"Povo 1, Dipartimento Di Ingegneria E Scienza Dell'informazione"	"university"	"4.3333335"^^xsd:float

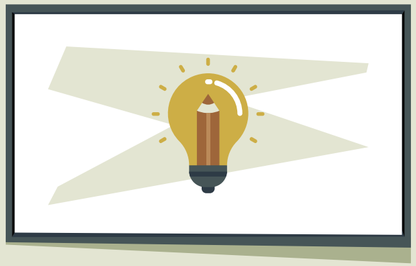
Conclusions
&
Open Issues

Conclusions & Open Issues

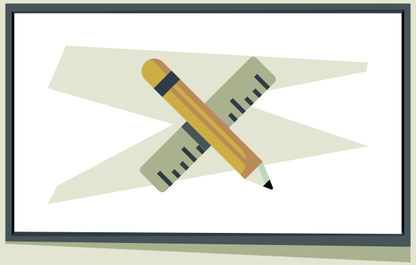
Purpose Fulfillment



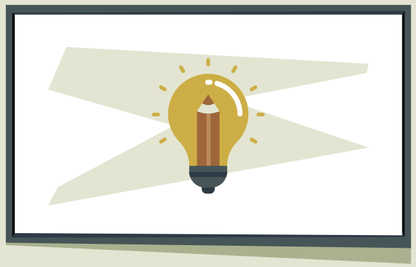
KG Exploitation



URI error



PoIs modelling



Langauge Dataset

Thank you

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