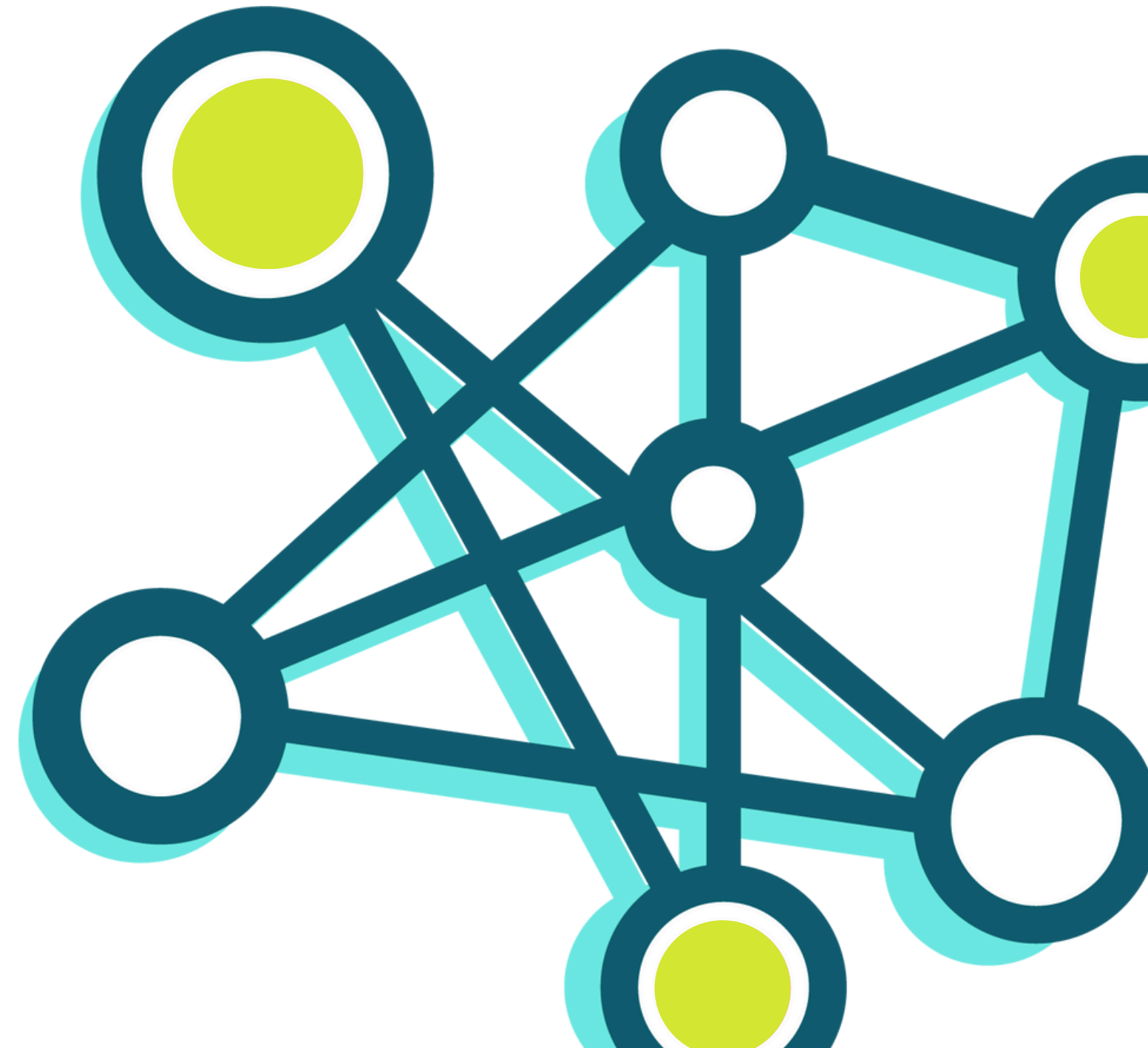


KGE 2024

Sports Facilities & Events in Trentino

Mouez Khelifi, Pietro Bologna, Christian Sassi



Phase 1

Purpose Definition

Purpose

Access to sports facilities and events plays a crucial role in improving the quality of life in Trentino Province. Our project focuses on creating a Knowledge Graph to consolidate information about these resources, offering a unified platform for residents, tourists, and local authorities. With this tool, we aim to inspire active lifestyles, foster community engagement, and support informed decision-making. Ultimately, this initiative promotes public health and cultivates a vibrant sports culture in the region

Purpose

Scenarios

Four different scenarios:
Weekday, Weekend, Holidays
and **Festival dello Sport**.

Personas

Four type of personas with
different backgrounds: **Luca,**
Anna, Matteo and **Camilla**.

CQs

Four type of personas with
different backgrounds: **Luca,**
Anna, Matteo and **Camilla**.

Scenarios

1. **Weekday:** Across the Trentino, on a typical weekday.
2. **Weekend:** In the province of Trento, on a weekend, when sports facilities may see an higher activity as locals and tourists alike participate in and spectate at community sports events.
3. **Holidays:** In Trentino, during the holiday periods (e.g. Christmas, Summer, etc.), when a high influx of tourists is expected.
4. **Festival dello Sport:** In Trento, during the Festival dello Sport 2024. During this time, a variety of sports events and exhibitions are scheduled, attracting both residents and visitors.

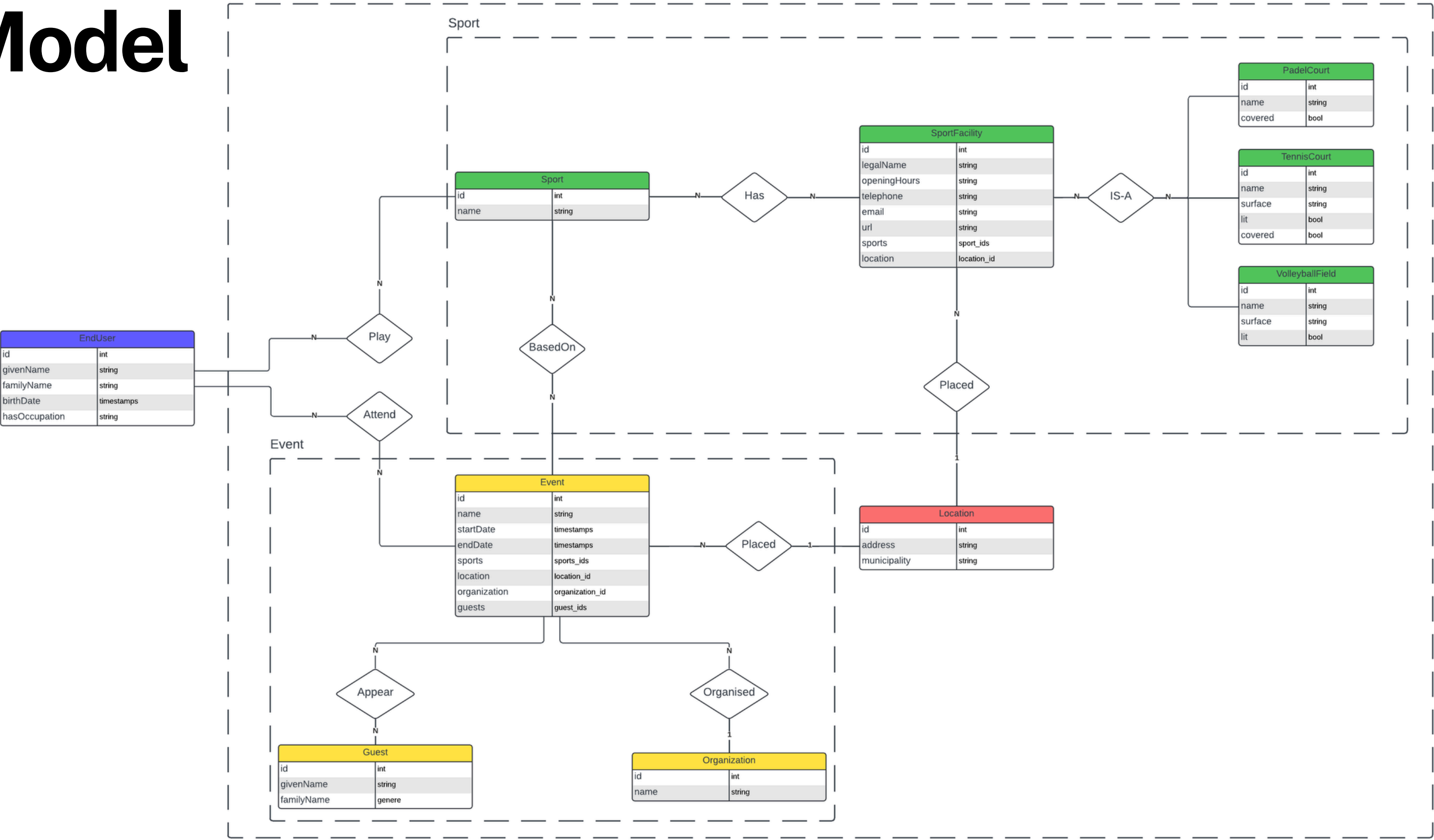
Personas

1. **Luca** is a 35-year-old engineer working in Trento. He is passionate about outdoor sports, especially padel.
2. **Anna** is a 21-year-old university student from Verona, studying in Trento. She enjoys playing volleyball with her friends.
3. **Matteo** is a 42-year-old tourist visiting Trento during the Christmas holidays. He has a passion for winter sports.
4. **Camilla** is a 24-year-old volunteer student at the annual "Festival dello Sport" in Trento and assist visitors discovering the wide range of activities available throughout the city.

Competency Questions (CQs)

1. Luca inquires about available padel courts in Trento after 7 PM.
2. Luca also asks if there are any padel events during the weekend of the Festival dello Sport.
3. Luca asks if there will be events in Trentino that have Sara Errani as a guest.
4. Anna wants to know what sports can be practiced in Trentino.
5. Spending the weekend with friends in Arco, Anna asks if there are any lighted volleyball or beach volleyball courts available throughout the day.
6. As a volleyball enthusiast, Anna would like to know if there will be any volleyball events during the summer holidays of 2024.

ER Model



Phase 2

Information Gathering

Knowledge and Data Sources

Knowledge Layer

- Schema.org

Data Layer

- Overpass Turbo
- OpenData Trentino
- Pagine Gialle
- Festival dello Sport
- Comune di Trento
- List of Municipalities

Phase 3

Language Definition

ConceptID	Word-en	Gloss-en
UKC-2593	sport	An active diversion requiring physical exertion and competition
UKC-56	event	Something that happens at a given place and time
KGE24 SportFacilities &SportEvents 8001	guest	Represents a guest or participant involved in a sports event

Etype

ConceptID	Word-en	Gloss-en
OSM-surface	surface	Describes the surface of a feature
schema.org telephone	telephone	The telephone number

Data properties

ConceptID	Word-en	Gloss-en
UKC-85982	placed	Situated in a particular spot or position
UKC-104711	organise	Create (as an entity)

Relationships

Phase 4

Knowledge Definition

Ontology

Schema.org

- Thing > Event
- Thing > Organization
- Thing > Person > EndUser
- Thing > Person > Guest
- Thing > Place > LocalBusiness > SportsActivityLocation > Facility
- Thing > Place > LocalBusiness > SportsActivityLocation > PadelCourt
- Thing > Place > LocalBusiness > SportsActivityLocation > TennisCourt
- Thing > Place > LocalBusiness > SportsActivityLocation > VolleyballField

Custom

- Thing > Activity
- Thing > Location

Teleology

- owl:Thing
 - Event_UKC-56
 - Facility_UKC-17619
 - Guest_KGE24-SportFacilities&SportEvents-8001
 - Location_UKC-695
 - Organization_UKC-43416
 - PadelCourt_KGE24-SportFacilities&SportEvents-8002
 - Sport_UKC-2593
 - TennisCourt_KGE24-SportFacilities&SportEvents-8003
 - User_UKC-53492
 - VolleyballField_KGE24-SportFacilities&SportEvents-8004

- owl:topDataProperty
 - address_UKC-45004
 - birthDate_schema.org-birthDate
 - covered_UKC-83504
 - email_schema.org-email
 - endDate_schema.org-endDate
 - family_name_UKC-33528
 - given_name_UKC-33531
 - hasOccupation_schema.org-hasOccupation
 - identification_UKC-36247
 - lit_UKC-75466
 - municipality_UKC-45537
 - name_UKC-2
 - openingHours_schema.org-openingHours
 - startDate_schema.org-startDate
 - surface_OSM-surface
 - telephone_schema.org-telephone
 - url_schema.org-url

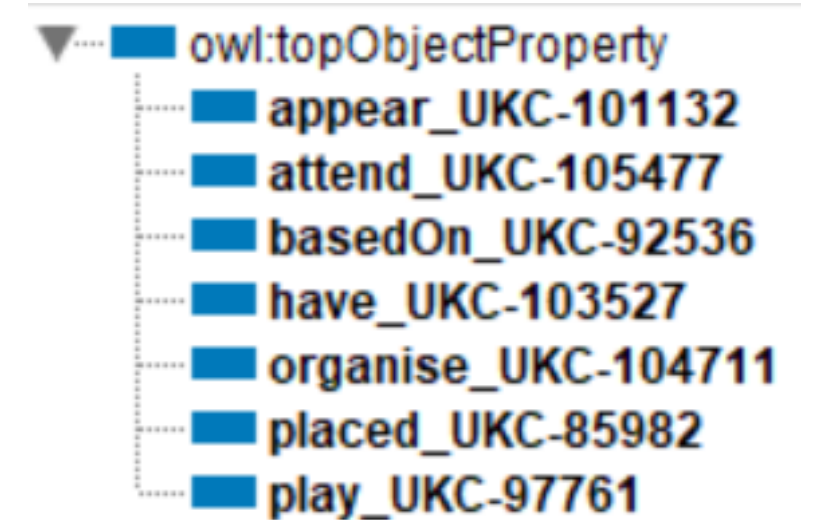
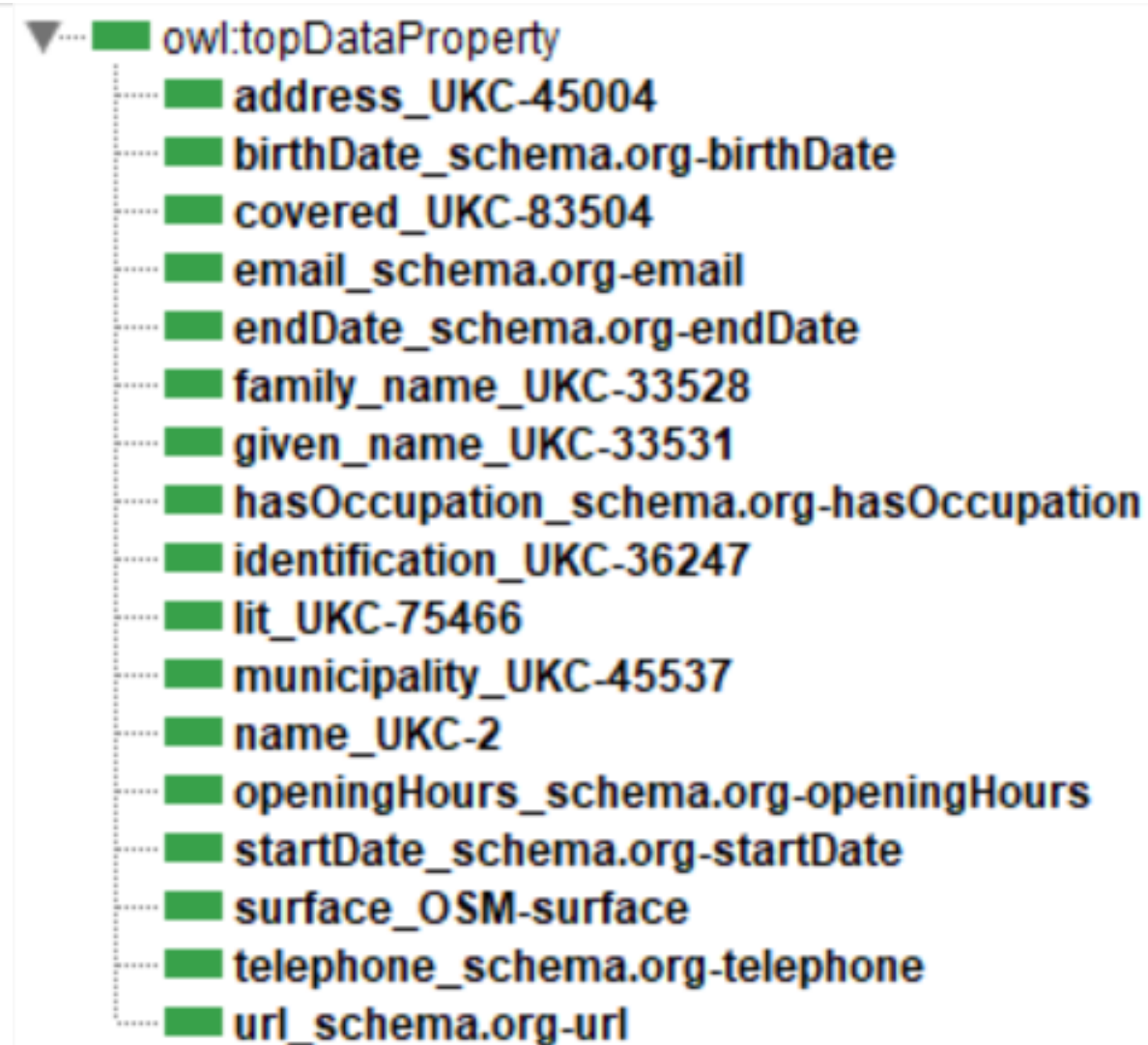
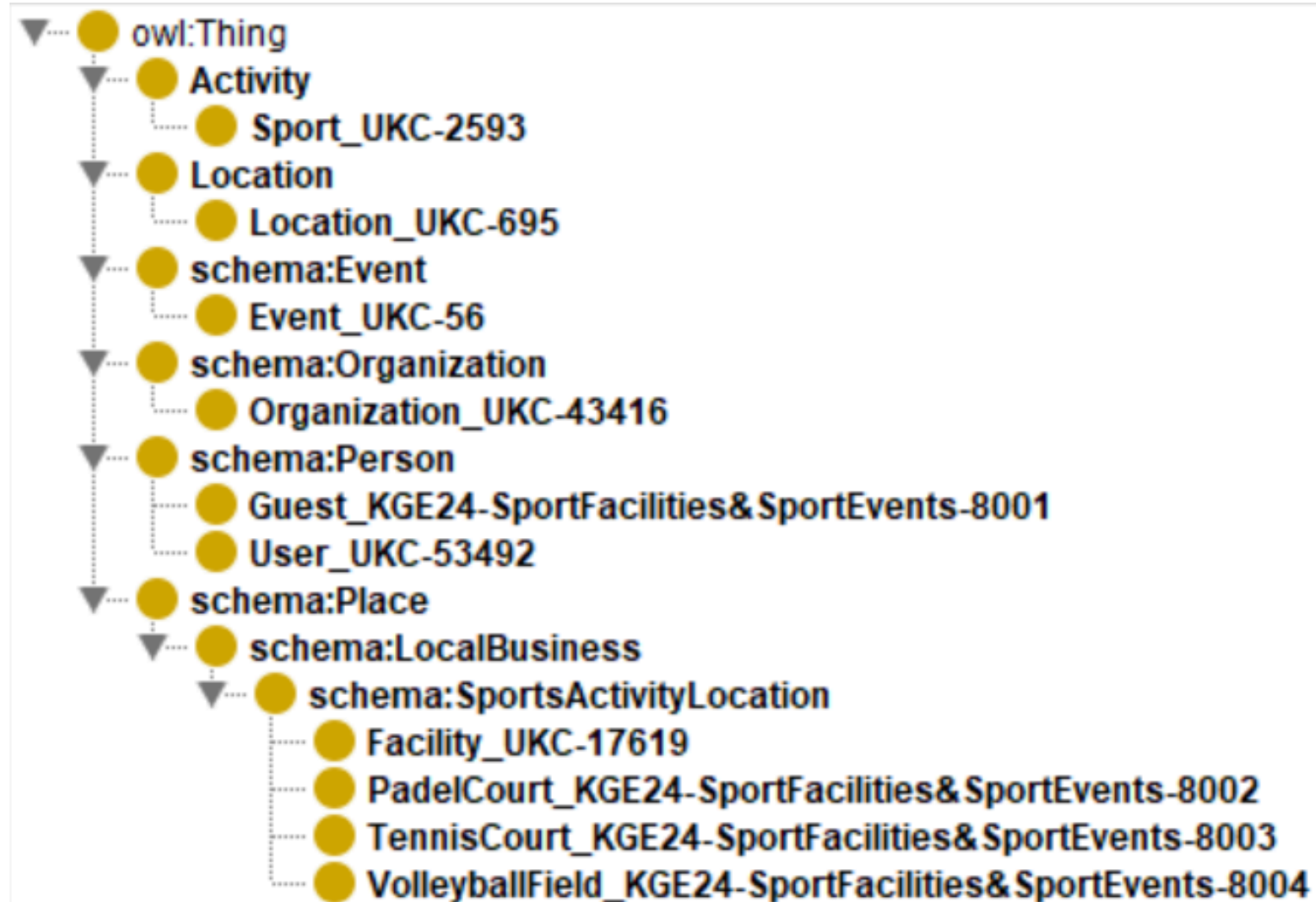
- owl:topObjectProperty
 - appear_UKC-101132
 - attend_UKC-105477
 - basedOn_UKC-92536
 - have_UKC-103527
 - organise_UKC-104711
 - placed_UKC-85982
 - play_UKC-97761

Teology

Domain	Object Property	Ranges
User_UKC-53492	play_UKC-97761	Sport_UKC-2593
Event_UKC-56	placed_UKC-85982	Location_UKC-695
Organization_UKC-43416	organise_UKC-104711	Event_UKC-56
...

Connection between Etypes

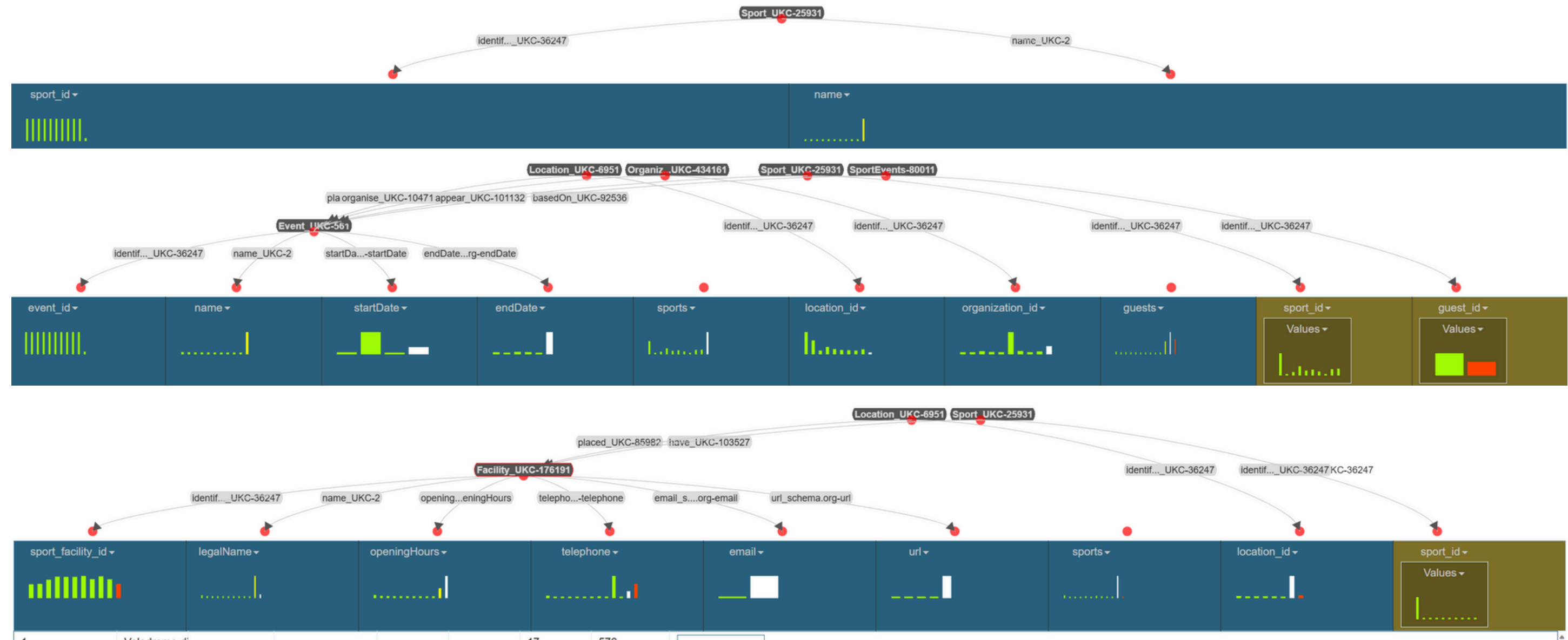
Teleontology



Phase 5

Entity Definition

Entity mapping



Evaluation

Coverage

$$Cov_E(CQ_E) = \frac{|CQ_E \cap T_E|}{|CQ_E|}$$

$$Cov_E(CQ_E) = \frac{10}{10} = 1$$

$$Cov_P(CQ_P) = \frac{|CQ_P \cap T_P|}{|CQ_P|}$$

$$Cov_E(CQ_E) = \frac{24}{24} = 1$$

$$Cov_E(RO_E) = \frac{|RO_E \cap T_E|}{|RO_E|}$$

$$Cov_E(RO_E) = \frac{6}{6} = 1$$

$$Cov_P(RO_P) = \frac{|RO_P \cap T_P|}{|RO_P|}$$

$$Cov_P(RO_P) = \frac{24}{24} = 1$$

Connectivity

$$PC(KG) = \sum_{X=1}^N PC(X) = 36242.79$$

$$EC(KG) = \sum_{X=1}^N EC(X) = 96912.67$$

Entity Type (X)

User_UKC-53492	40	0	0	0	0	0	0	0	0	0
Location_UKC-695	0	43099	0	360	0	0	0	31634	0	0
Sport_UKC-2593	0	0	27092	212	0	0	0	26276	0	0
Event_UKC-56	0	0	0	1039	0	0	0	0	0	0
Organization_UKC-43416	0	0	0	294	398	0	0	0	0	0
Guest_KGE24-SportFacilities&SportEvents-8001	0	0	0	580	0	2120	0	0	0	0
PadelCourt_KGE24-SportFacilities&SportEvents-8002	0	0	0	0	0	0	8	0	0	0
Facility_UKC-17619	0	0	0	0	0	0	4	103678	1424	48
TennisCourt_KGE24-SportFacilities&SportEvents-8003	0	0	0	0	0	0	0	0	3558	0
VolleyballField_KGE24-SportFacilities&SportEvents-8004	0	0	0	0	0	0	0	0	0	134
	User_UKC-53492	Location_UKC-695	Sport_UKC-2593	Event_UKC-56	Organization_UKC-43416	Guest_KGE24-SportFacilities&SportEvents-8001	PadelCourt_KGE24-SportFacilities&SportEvents-8002	Facility_UKC-17619	TennisCourt_KGE24-SportFacilities&SportEvents-8003	VolleyballField_KGE24-SportFacilities&SportEvents-8004

Entity Type (Y)

Exploitation

Query

CQ4: Anna wants to know what sports can be practiced in Trentino.

```
PREFIX xsd: <http://www.w3.org/2001/XMLSchema#>
PREFIX etype: <http://knowdive.disi.unitn.it/etype#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>

SELECT DISTINCT ?givenName ?familyName ?name
WHERE {

    ?user rdf:type etype:User_UKC-53492 ;
        etype:identification_UKC-36247 "2" ;
        etype:given_name_UKC-33531 ?givenName ;
        etype:family_name_UKC-33528 ?familyName .

    # Get Facilities
    ?facility rdf:type etype:Facility_UKC-17619 .

    # Retrieve sports associated with the facility
    ?have etype:have_UKC-103527 ?facility ;
        etype:identification_UKC-36247 ?have_sport_id .

    # Match sports details
    ?sport rdf:type etype:Sport_UKC-2593 ;
        etype:identification_UKC-36247 ?have_sport_id ;
        etype:name_UKC-2 ?name .

}
```

	givenName	familyName	name
1	"Anna"	"Bianchi"	"cycling"
2	"Anna"	"Bianchi"	"soccer"
3	"Anna"	"Bianchi"	"tennis"
4	"Anna"	"Bianchi"	"volleyball"
5	"Anna"	"Bianchi"	"equestrian"
6	"Anna"	"Bianchi"	"boules"
7	"Anna"	"Bianchi"	"judo"
8	"Anna"	"Bianchi"	"swimming"
9	"Anna"	"Bianchi"	"basketball"
10	"Anna"	"Bianchi"	"gymnastics"
11	"Anna"	"Bianchi"	"fencing"
12	"Anna"	"Bianchi"	"baseball"
13	"Anna"	"Bianchi"	"hockey"
14	"Anna"	"Bianchi"	"skateboard"
15	"Anna"	"Bianchi"	"athletics"

KGE 2024

Thank you

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