Tourist facilities – KDI Project

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1. Scope

- Platform to planify outdoor activities in Trentino
  - Skiing
  - Hiking
  - Biking
  - Accomodation
  - Lakes
  - …

1.1 Personas

- Sergio
  - Professional Skiier
  - He spends most of the winter in Trentino training to become a better skier, which requires a mixture of sports like snowshoe or biking
  - He needs new places

- Selma
  - Retired Swiss woman that wants to visit lakes in Trentino with her grandchildren
  - Looking for easy hiking trails
  - She really wants to spend the night in a hut/B&B by a lake

2. Inception - Competency queries

Persona	Query
Sergio	Give me the list options of bike trails inTrentino that are longer than 10 Km,with a high elevation and requires ex-pertise. Open during March
Sergio	Find all the ski resorts, with more than30km open of red or black slopes and open during the night
Selma	Find all the B&Bs near Lago di Lamar offering a breakfast with typical drinks and foods under 75€/night
Selma	Find the hiking trails that start from Lago di Molveno, having a low difficulty and the possibility of being assisted by a proper guide

2.2 Initial Datasets

- Trails, Snowshoe, Bike Trails and Huts

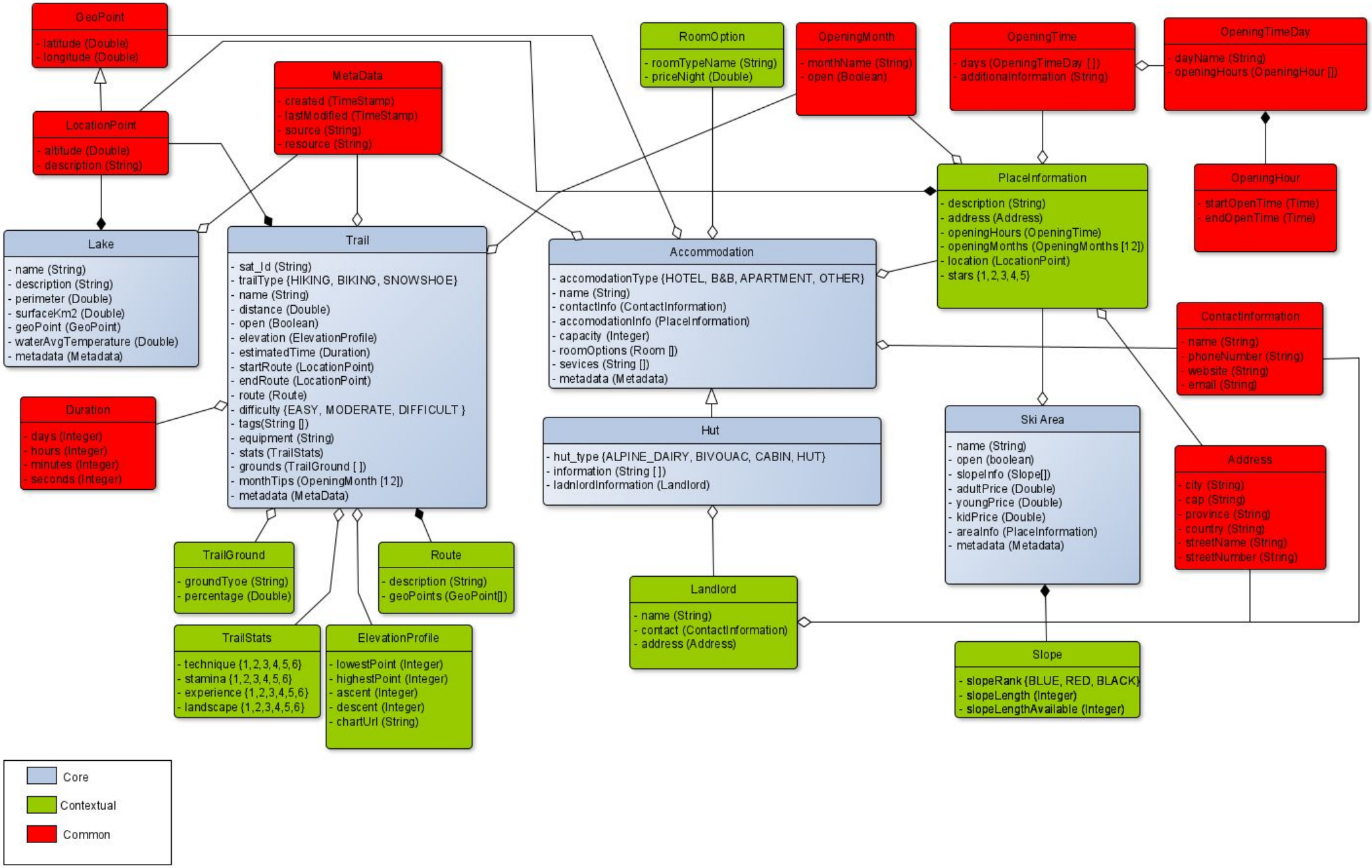
- Lakes, Apartments, Hotels and Bed & Breakfast

- Ski Areas

3. Informal Modelling

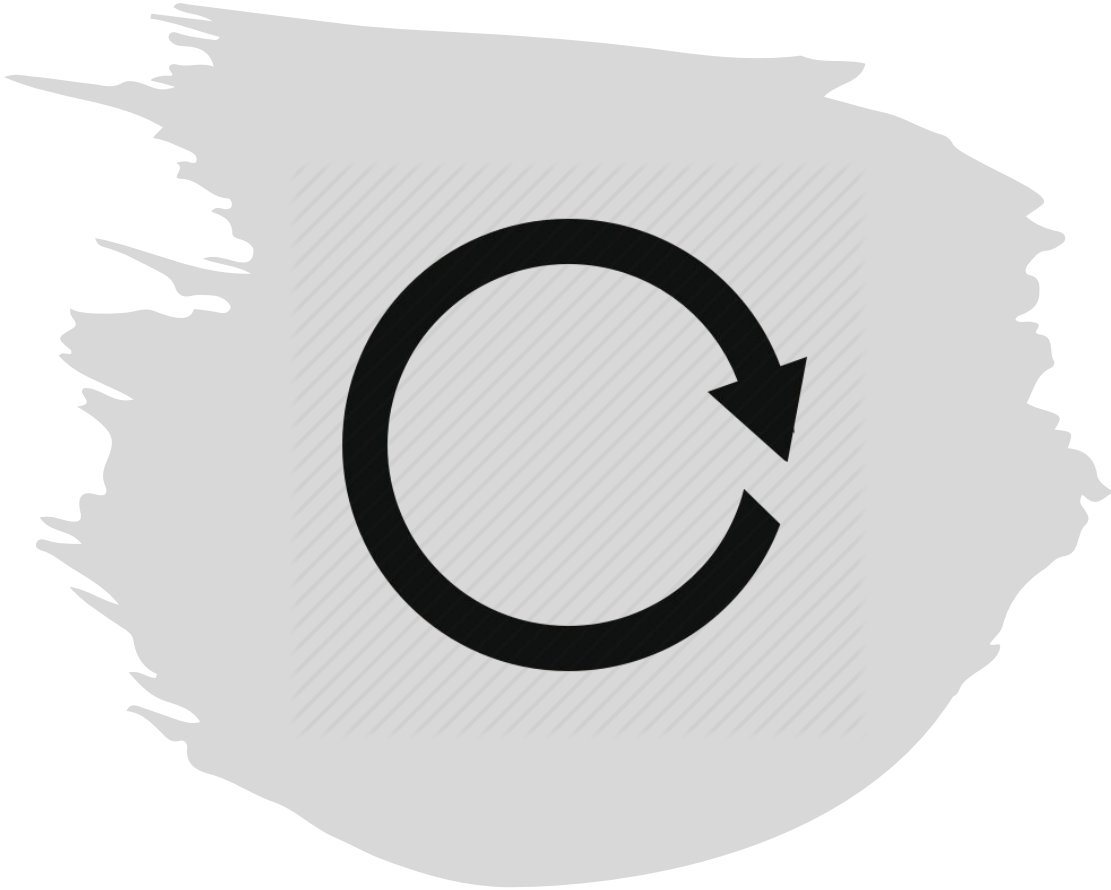
- EER model based on the queries
  - Core Entities (Blue)
  - Contextual Entities (Green)
  - Common Entities (Red)

EER MODEL


GeoPoint
- latitude (Double)
- longitude (Double)
LocationPoint
- altitude (Double)
- description (String)
MetaData
- created (TimeStamp)
- lastModified (TimeStamp)
- source (String)
- resource (String)
RoomOption
- roomTypeName (String)
- priceNight (Double)
OpeningMonth
- monthName (String)
- open (Boolean)
OpeningTime
- days (OpeningTimeDay [])
- additionalInformation (String)
OpeningTimeDay
- dayName (String)
- openingHours (OpeningHour [])
PlaceInformation
- description (String)
- address (Address)
- openingHours (OpeningTime)
- openingMonths (OpeningMonths [12])
- location (LocationPoint)
- stars {1,2,3,4,5}
OpeningHour
- startOpenTime (Time)
- endOpenTime (Time)
Lake
- name (String)
- description (String)
- perimeter (Double)
- surfaceKm2 (Double)
- geoPoint (GeoPoint)
- waterAvgTemperature (Double)
- metadata (Metadata)
Trail
- sat_Id (String)
- trailType {HIKING, BIKING, SNOWSHOE}
- name (String)
- distance (Double)
- open (Boolean)
- elevation (ElevationProfile)
- estimatedTime (Duration)
- startRoute (LocationPoint)
- endRoute (LocationPoint)
- route (Route)
- difficulty {EASY, MODERATE, DIFFICULT }
- tags(String [])
- equipment (String)
- stats (TrailStats)
- grounds (TrailGround [ ])
- monthTips (OpeningMonth [12])
- metadata (MetaData)
Accommodation
- accomodationType {HOTEL, B&B, APARTMENT, OTHER}
- name (String)
- contactInfo (ContactInformation)
- accomodationInfo (PlaceInformation)
- capacity (Integer)
- roomOptions (Room [])
- sevices (String [])
- metadata (Metadata)
ContactInformation
- name (String)
- phoneNumber (String)
- website (String)
- email (String)
Duration
- days (Integer)
- hours (Integer)
- minutes (Integer)
- seconds (Integer)
Hut
- hut_type {ALPINE_DAIRY, BIVOUAC, CABIN, HUT}
- information (String [])
- ladnlordInformation (Landlord)
Ski Area
- name (String)
- open (boolean)
- slopeInfo (Slope[])
- adultPrice (Double)
- youngPrice (Double)
- kidPrice (Double)
- areaInfo (PlaceInformation)
- metadata (Metadata)
Address
- city (String)
- cap (String)
- province (String)
- country (String)
- streetName (String)
- streetNumber (String)
TrailGround
- groundTyoe (String)
- percentage (Double)
Route
- description (String)
- geoPoints (GeoPoint[])
TrailStats
- technique {1,2,3,4,5,6}
- stamina {1,2,3,4,5,6}
- experience {1,2,3,4,5,6}
- landscape {1,2,3,4,5,6}
ElevationProfile
- lowestPoint (Integer)
- highestPoint (Integer)
- ascent (Integer)
- descent (Integer)
- chartUrl (String)
Landlord
- name (String)
- contact (ContactInformation)
- address (Address)
Slope
- slopeRank {BLUE, RED, BLACK}
- slopeLength (Integer)
- slopeLengthAvailable (Integer)
Core
Contextual
Common

3.3 Iteration

- Ajustment of CQ to make them compliant with the datasets
- Dataset cleaning and filtering to adjust them to the EER
- Added additional information into the dataset

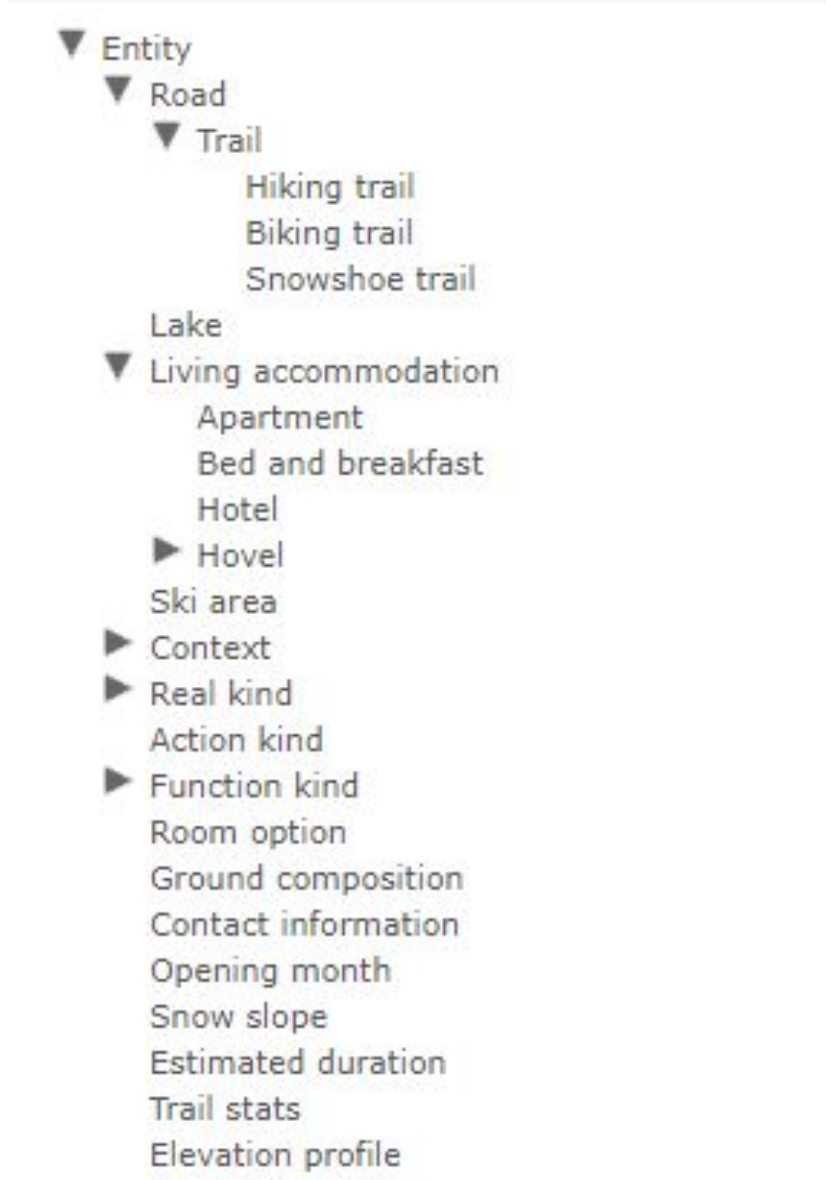


4. Formal Modeling

- Explore and define concepts and relationships present in the EER
  - KOS UKC
  - Import missing concepts using the KOS API
- Create the ontology in Protégé
  - Link to the UKC by annotations or globalID

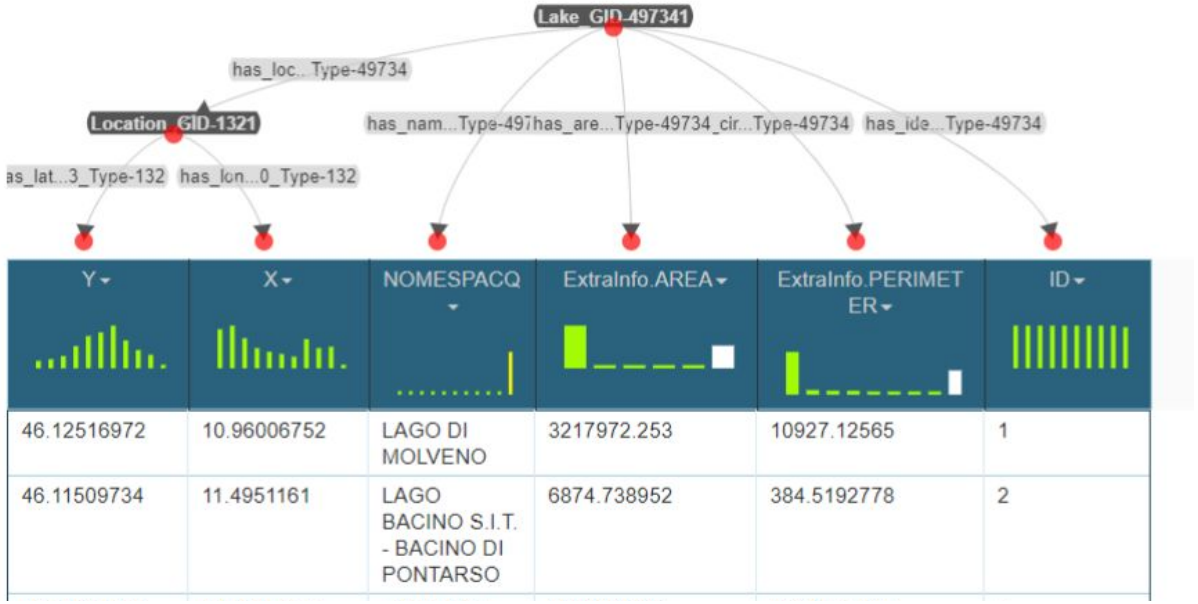
4. Formal Modelling

- Use the API to export the Etypes into KOS



5. Data Integration

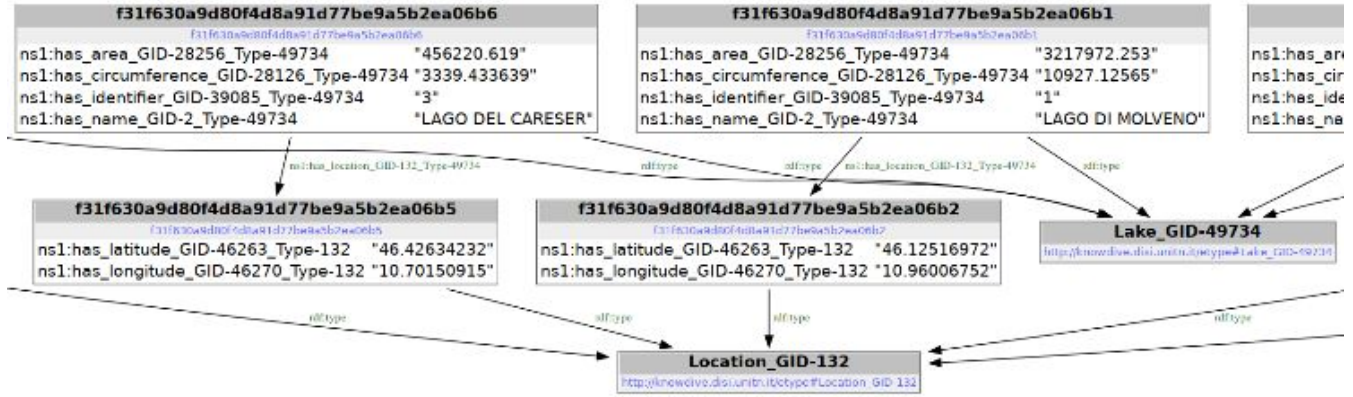
- Additional Dataset cleaning to make them compatible with Karmalinker



Y	X	NOMESPACQ	ExtraInfo.AREA	ExtraInfo.PERIMETER	ID
46.12516972	10.96006752	LAGO DI MOLVENO	3217972.253	10927.12565	1
46.11509734	11.4951161	LAGO BACINO S.I.T. - BACINO DI PONTARSO	6874.738952	384.5192778	2

5. Data Integration

- rdflibtools to visually inspect the generated DKG



6. Evaluation

Informal modelling

	Lake	Trail	Accommodation	Hut	SkiArea	PlaceInformation	Location	Duration
Coverage	0.06	0.35	0.09	0.2	0.04	0.08	0.22	0
Flexibility	0.08	0.65	0.03	0.09	0.03	0.04	0	0.33
Extensiveness	0.07	0.32	0.03	0.07	0.02	0.04	0	0.25
Sparsity	0.87	0.65	0.79	0.69	0.92	0.84	0.63	1

Formal modelling

	Lake	Trail	Accommodation	Hut	Ski_Area	Place_Information	Location	Duration
Coverage	0.08	0.35	0.18	0.18	0.09	0.14	0.33	0
Flexibility	0.22	1	0.09	0.11	0.07	0.02	0.33	0.16
Extensiveness	0.17	0.42	0.07	0.08	0.06	0.01	0.19	0.14
Sparsity	0.89	0.7	0.78	0.76	0.89	0.69	0.58	1

Thank you listening...

questions?