

Knowledge Graph Engineering Projects 2024-25

Knowdive Research Group

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Table of Contents

1 Projects Active Roles & Planning

2 Project Proposals

iTelos Active Roles

The efficiency of an iTelos project is based on the **effort** and the **cooperation** among the different actors who play on it.

The roles covered by those actors are four:

- **Project Manager (PM)**: in charge of coordinating the whole projects, as well as the cooperation among the other roles.
- **Domain Expert (DE)**: most of the time represented by the final user, she is the expert regarding the domain of interest (context in which the final K will be exploited).
- **Knowledge Engineer (KE)**: responsible for the management of knowledge resources (KG's knowledge layer building).
- **Data Scientist (DS)**: responsible for the management of data resources (KG's data layer building).

iTelos Active Roles

- PM, DE, DS and KE form a iTelos project's *Team*.
- DS and KE are the most important roles along the process, and due to that, **they must be covered by, at least, two different people**.
- This means that the Team have to be composed by at least two actors, that in the worst case will cover all the four roles.

iTelos Project Planning

Role	Task/Lecture	Purpose Definiton		Information Gathering		Language Definition		Knowledge Definiton		Entity Definition		Publication and Presentation	
		Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13		
Project Manager	Coordination												
	Project report (general management)												
	Open project phase - set up												
	Project publicaiton phase												
	Project presentation												
Domain Expert	Purpose Definitoin phase												
	Information Gathering (IG) phase												
	Project report (IG)												
	KG final evaluation												
	Project report (final)												
	Project Demo												
Knowledge Engineer	Knowledge metadata definiton												
	Purpose Definitoin phase												
	Information Gathering phase												
	Project report (IG)												
	Language Definiton (LD) phase												
	Project report (LD)												
	Knowledge Definiotn (KD) phase												
	Project report (KD)												
	Data Definiotn (DD) phase												
Project report (DD)													
Data Scientist	Data metadata definiton												
	Purpose Definiton phase												
	Information Gathering (IG) phase												
	Project report (IG)												
	Lanaguage Definiton (LD) phase												
	Project report (LD)												
	Knowledge Definiton (KD) phase												
	Project report (KD)												
	Data Definiton (DD) phase												
Project report (DD)													

iTelos Project set-up

- Each iTelos project needs a specific **repository**, where the resources (Language, Knowledge, Data and Metadata) are maintained during the process execution.
 - such a repository can be cloned by a [github template repository](#).
- **Documentation** is a crucial part during the execution of the iTelos process.
- A **project report** has to be completed at the end of the process execution.
 - At the end of each phase, a report document has to be filled, by reporting the execution of the current phase activities
 - **You can find the template for such a report document in the project repository template, in the "Documentation" directory.**
- At the end of the project, a **set of slides summarizing the work done** needs to be produced and stored in the repository together with the project report, into the dedicated "Documentation" directory.

Table of Contents

1 Projects Active Roles & Planning

2 Project Proposals

Projects development - General approach

- Each project aims at reusing existing resources, by composing them into a single Knowledge Graph.
- To this end, each project is structured by considering three main type of resources:
 - **Top level reference context resources:** this type of resources represent the most general environment in which the projects purposes are defines. For all the projects such a resources are the Open Street Map (OSM) top level ontology and data.
 - **Reference context resources:** this type of resources represent the reference domain of interest for the purpose to be executed. For example if the purpose is relative to the healthcare sector, an healthcare ontology and suitable data compose the reference context resources.
 - **Personal contexts or Secondary reference context:** When it is available (not for all projects) this type of resources represent the last data to be integrated with the previous ones. This resources can represent a personal context (from the point of view of a (or a set of) person), or a second reference context.

1 - Trentino Territory & Transportation - Purpose

- **Draft Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the Transportation service on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

1 - Trentino Territory & Transportation - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - KGE22 - Trentino Urban Transportation
 - Dati Cartografici

2 - Trentino Territory & Tourism Facilities - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the main Tourism Facilities (like Hotels, Restaurants, Museums, Natural parks, and others) on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

2 - Trentino Territory & Tourism Facilities - Resources

■ Knowledge Resources

- **Top Level:** [Open Street Map - Trentino Territory Ontology](#)
- **Ref. context:**
 - [SCHEMA.ORG](#)
 - [SCHEMA.ORG LOV](#)
 - [GTFS STATIC](#)
 - [GTFS LOV](#)
 - [GTFS UPGRADED \(Subashish\)](#)
 - [GEOSPATIAL ONTOLOGY \(Subashish\)](#)
 - [TIME ONTOLOGY](#)

■ Data resources

- **Top level:** [Trentino OSM - collect your data](#)
- **Ref. context:**
 - [KGE22 - Trentino Tourist Facilities](#)
 - [ISTAT Turismo](#)
 - [OPEN DATA TRENTO](#)

3 - Trentino Territory & Health Facilities - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the main Health Facilities (like Hospitals, Pharmacies, Medical Centers, and others) on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

3 - Trentino Territory & Health Facilities - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY
 - FAIR

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - KGE22 - Trentino Healthcare Facilities
 - Comune di Trento

4 - Trentino Transportation & Health Facilities - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the main Health Facilities (like Hospitals, Pharmacies, Medical Centers, and others) and how they are connected through the Transportation service on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

4 - Trentino Transportation & Health Facilities - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY
 - FAIR

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - KGE22 - Trentino Urban Transportation
 - Comune di Trento

5 - Trentino Transportation & Education Facilities - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the main Education Facilities (like Universities Faculties, Departments, Libraries, and others) and how they are connected through the Transportation service on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

5 - Trentino Transportation & Education Facilities - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY
 - VIVO

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - Digital University, LiveData UniTN
 - Comune di Trento

6 - Trentino Territory & Education Facilities - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the main Education Facilities (like Universities Faculties, Departments, Libraries, and others) on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

6 - Trentino Territory & Education Facilities - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY
 - VIVO

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - KGE22 - Trentino Education
 - Digital University, LiveData UniTN
 - Comune di Trento

7 - Weather and climate change in Trentino - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the climate change, by considering weather information on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

7 - Weather and climate change in Trentino - Resources

■ Knowledge Resources

- **Top Level:** [Open Street Map - Trentino Territory Ontology](#)
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY
 - Weather Ontology
 - Paper-1, Paper-2

■ Data resources

- **Top level:** [Trentino OSM - collect your data](#)
- **Ref. context:**
 - KGE22 - Trentino Weather
 - PAT Geoportal
 - OPEN DATA TRENTO

8 - Sport Facilities & Events in Trentino - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about Sports Events and Sport Facilities on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

8 - Sport Facilities & Events in Trentino - Resources

■ Knowledge Resources

- **Top Level:** [Open Street Map - Trentino Territory Ontology](#)
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY
 - BBC Sport

■ Data resources

- **Top level:** [Trentino OSM - collect your data](#)
- **Ref. context:**
 - KGE22 - Trentino Sports
 - Sport Events

9 - Tourism & Waste Management in Trentino - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the waste management connected to the tourism influence on the Trentino Province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

9 - Tourism & Waste Management in Trentino - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY
 - Paper - ontological model

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - KGE22 - Trentino Tourist Facilities
 - ISPRA catasto rifiuti

10 - Sports Facilities & Transportation in Trentino - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about Sport Facilities (and other spots) which can be reached by users using the Trentino public transportation service.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

10 - Sports Facilities & Transportation in Trentino - Resources

■ Knowledge Resources

- **Top Level:** [Open Street Map - Trentino Territory Ontology](#)
- **Ref. context:**
 - [SCHEMA.ORG](#)
 - [SCHEMA.ORG LOV](#)
 - [GTFS STATIC](#)
 - [GTFS LOV](#)
 - [GTFS UPGRADED \(Subashish\)](#)
 - [GEOSPATIAL ONTOLOGY \(Subashish\)](#)
 - [TIME ONTOLOGY](#)
 - [BBC Sport](#)

■ Data resources

- **Top level:** [Trentino OSM - collect your data](#)
- **Ref. context:**
 - [KGE22 - Trentino Sports](#)
 - [Sport Events](#)

11 - Sports Facilities & Trentino Territory - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about Sport Facilities (and other spots) located in the Trentino province territory.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

11 - Sports Facilities & Trentino Territory - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - KGE22 - Trentino Sports
 - Sport Events

12 - International Digital University - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about research collaboration (published paper, project or others) between the university of Trento and the national university of Mongolia, describing also the different location of the two university facilities.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

12 - International Digital University - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - GTFS STATIC
 - GTFS LOV
 - GTFS UPGRADED (Subashish)
 - GEOSPATIAL ONTOLOGY (Subashish)
 - TIME ONTOLOGY
 - LiveData UniTN - Knowledge
 - LiveData NUM - Knowledge

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - LiveData UniTN - Data
 - LiveData NUM - Data

13 - Knowdive Research Products - Purpose

- **Purpose:** The purpose of this project is to engineer a Knowledge Graph able to support application and services providing information about the research products (papers, reports, and any other published result) generated by the Knowdive research group (University of Trento, DISI). Geographical aspects regarding the Knowdive members location can be added in the project.
- **Objective:** The goal of the project is to build a KG starting from the above draft Purpose (it needs to be detailed with your personal idea), and a set of knowledge and data resources (described here below).

13 - Knowdive Research Products - Resources

■ Knowledge Resources

- **Top Level:** Open Street Map - Trentino Territory Ontology
- **Ref. context:**
 - SCHEMA.ORG
 - SCHEMA.ORG LOV
 - LiveData UniTN - Knowledge

■ Data resources

- **Top level:** Trentino OSM - collect your data
- **Ref. context:**
 - LiveData UniTN - Data
 - Knowdive - people - current
 - Knowdive - people- alumni