



*KNOWDIVE*



**KGE - Knowledge Graph Engineering**

## **KGE Projects Description**

Existing examples of KGE projects

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- 1 What is a KGE project**
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# What is a KGE project

A Knowledge Graph Engineering (KGE) Project is a complete execution of a process having the objective to build a **quality** and **reusable** KG able to support the requirements specified by a given **Purpose**.

- **Explicit goal:** A KGE project originates from specific needs of final users (the Purpose) that want to exploit the KGE results.
- **Implicit goal:** A KGE project aims to produce KGs (as well as resources composing KGs) with high level of reusability, with the objective to support a FAIR-based open data environment.

# KGE project - Input

The **input** of a KGE project is composed by:

- **The Purpose** (informal functional requirement): the final user needs, to be satisfied.
- **Existing resources** (non-functional requirement): existing data and knowledge resources which have to be handled to build the KG. Often, this KGE input is provided as a data sources list from which the resources have to be collected.

# KGE project - Output

The **output** of a KGE project is composed by:

- **Entity Graph (EG):** the KG produced which includes the entities required to satisfy the user's Purpose.
- **Project's documentation:** a project report which help external reader to understand the KGE process which led to the production of a specific KG.
- **Reusable resources:** all the (formalized) resources used to compose the final KG. They are provided as reusable resources in order to be exploited (singularly or as a set) in other KGE projects for different purposes.

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# KGE Project Documentation

The documentation aims to describe in details the KGE project, focusing on the following key points:

- Domain of Interest (DoI)
- Project Purpose
- Resources involved (phase by phase)
- Methodology phases development
- Final outcome
- Output evaluation
- Entity Graph exploitability (demo)
- Open issues

Thanks to the documentation produced, the project's output, as well as all the resources involved, become more understandable, clear and reusable by external users.

# KGE Project Documentation - Objects

The project documentation objects that have to be produced are:

- **Project Report:** a textual document (defined following a specific template) describing the key points listed above (see previous slide).
- **Project Presentation:** a set of slides which aims to present the exploitability of the KGE final outcome.
- **EG Demo:** a demonstrator of the KGE final outcome. This demo should show how the EG developed during the project can be used to satisfy the user needs initially defined.



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# KGE Project's Artifacts

A KGE project, during its execution, produce several "artifacts" (not only data and knowledge resources):

- **Knowledge collected:** schemas, ontologies and other knowledge resources.
- **Data collected:** datasets.
- **Methodology intermediate outcomes:** this resource category includes all the artifacts (non included in the previous categories) that are used to build the final EG (such as requirement list, ER models, and others)
- **Final outcome:** the Entity Graph.
- **Metadata:** the meta information collected for both the knowledge and data resources handled in the project. The metadata allows to improve the resources reusability.
- **Code libraries:** scripts, small libraries and/or specific tools used to collect/filter/clean/format the data and knowledge resources.

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# KGE Project Planning

The efficiency of a KGE 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).

# Project Planning - Roles

- PM, DE, DS and KE form a KGE 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.

# Project Planning - Gantt

Role	Task	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	
Project Manager	Coordination	[Red bar]										
	Project report (general management)	[Red bar]										
	Open project phase	[Red bar]										
	Close project phase									[Red bar]		
	Project presentation										[Red bar]	
Domain Expert	Inception phase	[Yellow bar]										
	Project report (inception)	[Yellow bar]										
	EG final evaluation									[Yellow bar]		
	Project report (final)										[Yellow bar]	
	Project Demo										[Yellow bar]	
Knowledge Engineer	Knowledge metadata definiton	[Blue bar]										
	Inception phase	[Blue bar]										
	Project report (inception)	[Blue bar]										
	Informal Modeling phase			[Blue bar]								
	Project report (Informal Modeling)			[Blue bar]								
	Formal Modeling phase				[Blue bar]							
	Project report (Formal Modeling)				[Blue bar]							
	Data Integration							[Blue bar]				
	Project report (Data Integration)							[Blue bar]				
Data Scientist	Data metadata definiton	[Green bar]										
	Inception phase	[Green bar]										
	Project report (inception)	[Green bar]										
	Informal Modeling phase			[Green bar]								
	Project report (Informal Modeling)			[Green bar]								
	Formal Modeling phase				[Green bar]							
	Project report (Formal Modeling)				[Green bar]							
	Data Integration							[Green bar]				
	Project report (Data Integration)							[Green bar]				

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# KGE Project Organization - Summary

KGE Project organization main aspects:

- Focus on **users needs** (project's Purpose).
- **Reusability** and **Shareability** of resources.
- Produce **quality resources** (using metadata) and **documentation**.
- **Effort** and **Cooperation** among the roles.
- Respect the project planning.



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# KGE Projects Examples

Projects from Knowledge and Data Integration course (2021-22):

- Events
- Transportation
- GeoParis
- Territory
- Education
- Facilities (University)
- Food Accomodation
- Health



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