Project Overview Document

Project information

Please provide important facts for your project, e.g. acronym, title, proposed period, principal investigator and contractor.

Project		
Acronym	DMIG	
Title	Domestic Migration in Germany	
Period	Start: 03.10.2023	End: 31.01.2024
Principal investigator		
Contractor		

Document version

Nr.	Date	Version	Altered chapters	Type of altering	Author
1	30.10.2023	1.1	all	Creation	Adian Dawuda
2	05.11.2023	1.2	all	Additions	Dawuda/Schachtschneider
3	23.11.2023	1.3	all	Changes/Additions	Dawuda/Schachtschneider
4	01.12.2023	1.4	Risk matrix, WBS	Additions	Dawuda/Schachtschneider
5					

Project Content and Project Goals

Please provide an overview of your project with its main activities. Additionally give some information on the purpose, benefits and target groups as well as the proposed goals of your project. Please also provide explicit information on those aspects of the overall challenges, which you will not tackle with your project.

Content & Goals

Project description *(~100-150 words)*

This Project aims to build a spatial data infrastructure of yearly German domestic migration data. The migration data will be sourced from the German GENESIS (Gemeinsames Neues Statistisches Informations-System) online platform. The German State boundary geodata will be sourced separately and combined with the migration data in a PostGIS geodatabase. The process of downloading and preprocessing the aforementioned data will be highly automated with a Python script. Using Geoserver, WFS/WMS of the data will be created and incorporated into a dashboard. The dashboard will also include external services to aid in visualization (e.g., basemap) and will enable the interactive visualization of data from different years. In addition to the spatial visualization, data not depicted on the map will also be shown in panels of the dashboard.

Project purpose, benefits and target group description *(~100 words)*

The main target group of this project are researchers or professionals in the field of politics, as the spatial aspect of the discourse on migration may be used to discover patterns and make decisions. The benefits of this project include:

- The creation of a spatial overview/perspective on migration discourse
- Highly automated workflow, which requires little to no change for data from different years (future data in mind)
- Supporting political decision making or planning
- OGC web services can be incorporated into applications based on users needs
- Dashboard well suited as a data source or for use in presentations
- Transparent and well documented workflow providing results free of cost

Project objectives (please also include a listing of the sub-goals) *(~100 words)*

Project objectives include:

- Develop automated integration of necessary data into a PostGIS database
  - ➔ Develop a Python workflow to download domestic migration data and German state geodata (interaction with API if possible)
  - ➔ Develop a Python workflow to preprocess the downloaded data and import it into the database.
- Optimized geodatabase in 3rd normal form
- Data Published as OGC web services
- Dashboard
  - ➔ Includes spatial data across all available years
  - ➔ Additional information and statistics

Non-Goals

- Analysis of migration at a district level
- Reasons for the migration

- Differentiating between different types of migration (most likely not enough data for meaningful results)

Frame of the project

Please provide a description of the existing situation. Therefore, please describe the actual state and the identified challenges. As a second part, please also provide the most important information with regard to the proposed project period and the most important dates (Kick-off, interim/mid-term report/presentation, final report, paper submission etc.)

Context
Up-to-date status *(~50-100 words)*
The overall project is currently in its early stages. The literature review phase is complete and the methodology is largely finalized. A source for the migration data has successfully been identified. Current work is ongoing to automate the data acquisition with the use of an API. The best source for the spatial data of German states is currently being searched for.
Project setting *(~50 Wörter)*
The project is being conducted during the winter semester of 2023/2024 in the *SDI Services Implementation* course in the M.Sc. Applied Geoinformatics curriculum. Over the course of the semester, a total of 200 hours is to be spent working on the project. This time is split up evenly among project members.

Dates			
Time period			
Start:	03.10.2023	End	31.01.2024
Important Dates			
1	03.10.2023	Project start	
2	28.11.2023	Presentation: project idea and planned architecture	
3	24.12.2023	Automated data acquisition and preprocessing script complete	
4	23.01.2024	Presentation: Final architecture and project presentation	
5	28.01.2024	Data processing complete and dashboard complete	
6	31.01.2024	Dissemination complete and project end	

Resources & Budget

Please provide information on the project lead and the project team. Please include information on name, role and qualification. Additionally provide information about the planned resources with regard to personal costs and other costs,

Project Team
Projekt Lead
Adian Dawuda
Project Team
Felix Schachtschneider

Resources
Personal costs
Project costs
Other Costs

Project structure, description and risk matrix

Please provide a description about your work plan (work breakdown structure) your work packages in tabular and graphical form.

Work packages overview:

WP	Name	Time Frame
1	Project Management	03.10.2023 – 31.01.2024
2	Literature review & Methodology	03.10.2023 – 19.11.2023
3	Data Acquisition & Pre-Processing	20.11.2023 – 24.12.2023
4	Data Processing & Analysis	18.12.2023 – 28.01.2024
5	Dissemination	30.10.2023 – 31.01.2024

Work Breakdown Structure (WBS)

DMIG Work Package Breakdown

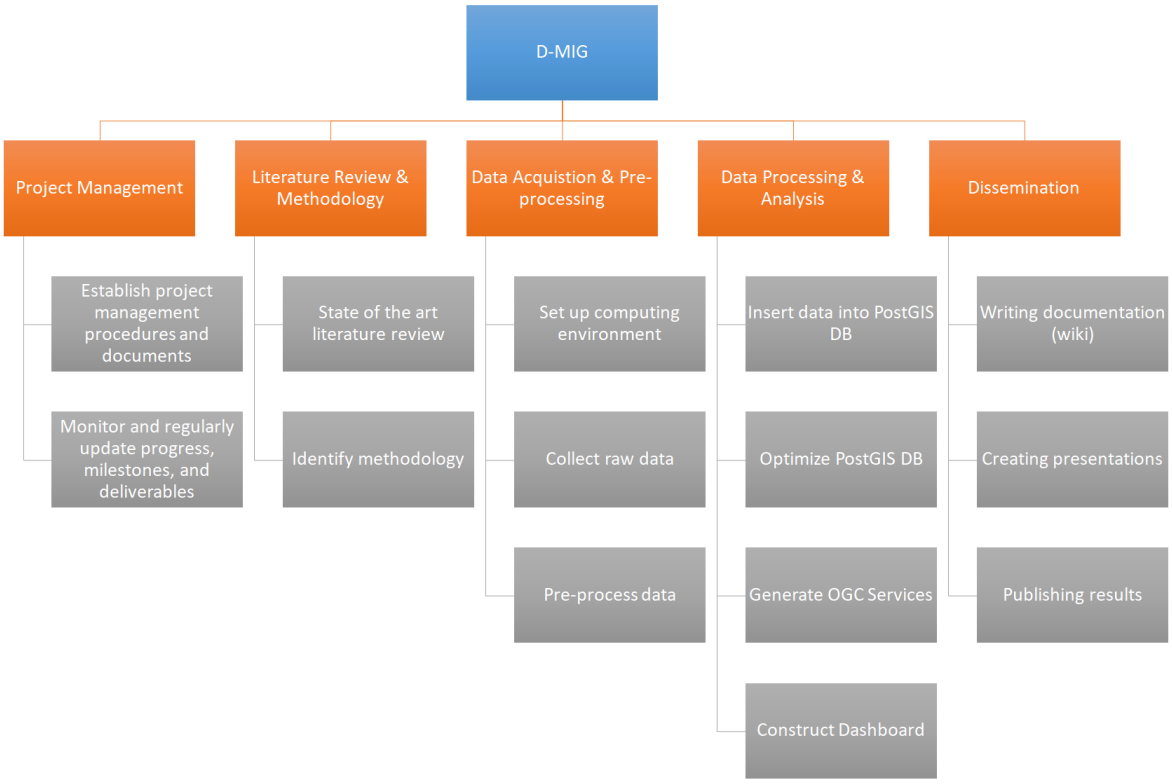

Figure 1 Work breakdown Structure

Detailed work plan

Please document the goals, content and expected results for each work package. Provide information on the planned approach and methods you want to apply as well as the expected results (including the planned milestones and deliverables). As a first work package please use 'project management'. (Add as many WP tables you need)

WP 1	**Project management**	**03.10.2023 – 31.01.2024**
WP Lead		**WP team**
Adian		Felix
Objectives		
To ensure that the project is completed on time and to the required quality standards. The process is successfully documented via GitLab.		
Content & Tasks		
1.1. **Establish project management procedures and documents** 1.2. Monitor and regularly update progress, milestones, and deliverables		
Expected results		
A well-organized project management framework that supports the successful implementation of the project.		
Milestones & Deliverables		
M1: Project management tools created D1: Project overview documents D2: GitLab Wiki and repository entries		

WP 2	**Literature review & Methodology**	**03.10.2023 – 19.11.2023**
WP Lead		**WP team**
Felix		**Adian**
Objectives		
The main objective is to find and catalogue relevant literature/information and gain a good understanding of the state of the art for this topic. Additionally, to identify the methodology to be used.		
Content & Tasks		
2.1. State of the art literature review 2.2 Identify methodology		
Expected results		
Getting a good and deeply understanding of the state of the art and finding a suitable methodology.		

Milestones & Deliverables
M1 Understanding of the project's position among the state-of-the-art development M2 Selected methodology approach

WP 3	Data Acquisition & Pre-Processing	20.11.2023 – 24.12.2023
WP Lead		**WP team**
Adian		Felix
Objectives		
The main objective is to identify all necessary data and develop an automated download and preprocessing workflow using Python.		
Content & Tasks		
3.1 Set up computing environment 3.2 Collect raw data 3.3 Preprocess data		
Expected results		
A data set that is that can be automatically collected and pre-processed. An understanding of the quality and completeness of the data collected.		
Milestones & Deliverables		
M1: Functional computing environment D1: Automated workflow to collect data D2: Automated workflow to preprocess data D3: Preprocessed data		

WP 4	Data Processing & Analysis	18.12.2023 – 28.01.2024
WP Lead		**WP team**
Felix		**Adian**
Objectives		
The main objective is to construct a spatial data infrastructure for the collected and preprocessed data.		
Content & Tasks		
4.1 Insert data into PostGIS DB		

4.2 Optimize PostGIS DB 4.3 Generate OGC services 4.4 Construct Dashboard
Expected results
A spatial data infrastructure comprising data storage in a PostGIS DB, web-service publishing, and integration into a dashboard.
Milestones & Deliverables
D1: Data in PostGIS DB D2: Optimized and well-structured DB (3rd normal form) D3: OGC web-services of the relevant data D4: Visualization of the data in a dashboard

WP 5	**Dissemination**	**30.10.2023 – 31.01.2024**
WP Lead		**WP team**
Adian		Felix
Objectives		
Describing the project comprising Introduction, Methods, Results and Discussion parts. To create two presentations. To publish the code used for the analysis.		
Content & Tasks		
5.1 Writing documentation (wiki) 5.2 Creating presentations 5.3 Publishing results		
Expected results		
A good documentation and awesome presentations with according results.		
Milestones & Deliverables		
D1: Documentation D2: Presentation D3: Used Code		

Milestone plan

Please provide a summary of the planned milestones and provide an according overview graphic.

Note: End of Work Packages are counted as additional milestones in the table and image below.

	Name	Date Completion
	Project Start	03.10.2023
M1	Understanding of the project's position among the state-of-the-art development	19.11.2023
M2	Selected methodology approach	19.11.2023
M3	Functional computing environment	03.12.2023
M4	Partially automated workflow and preprocessed data	24.12.2023
M5	Spatial Data Infrastructure set up	28.01.2024
M6	Completion of all tasks	31.01.2024
	Project End	31.01.2024

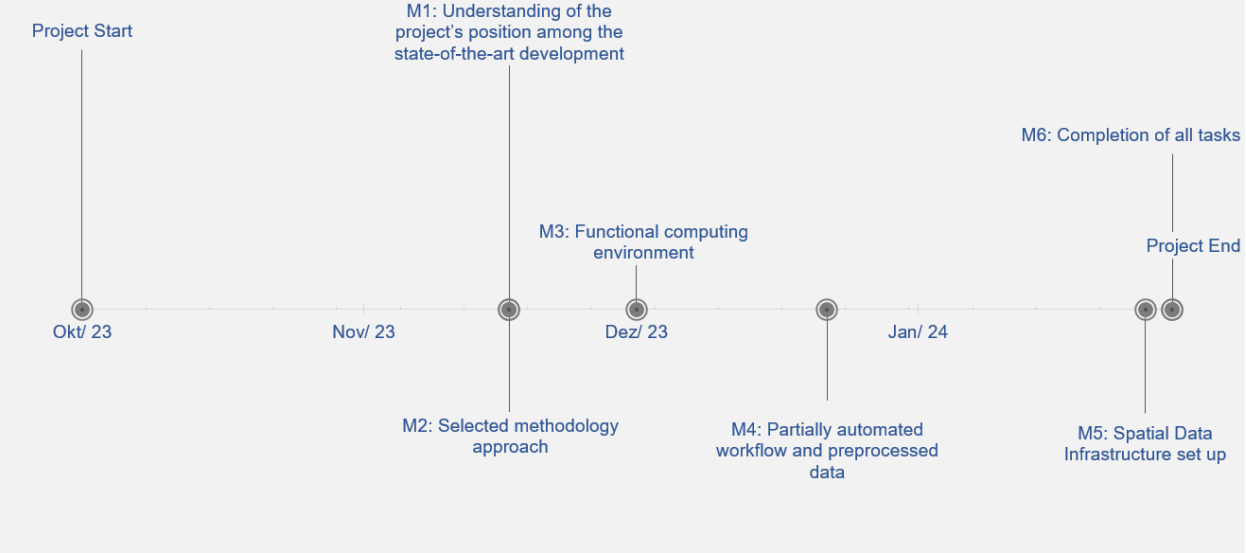

Figure 2 Milestones

Gantt Chart

Please provide an image of your Gantt Chart as overview graphics. Please attach the Gantt chart and it's monthly updates in addition to this document.

Project Name	Domestic Migration in Germany
Project Acronym	DMIG
Project Manager	Adian Dawuda, Felix Schachtschneider
Project Deliverable	Dashboard, Code, and Documentation
Start Date	3/10/2023
End Date	31/01/2024
Overall Progress	15 %

WP	Time Estimate (hours)	Tasks	Responsible	Start	End	Status
1	**20 (10%)**	**Project Management**				
1.1	10	Establish project management procedures and documents	Adian, Felix	KW40	KW46	Complete
1.2	10	Monitor and regularly update progress, milestones, and deliverables	Adian, Felix	KW40	KW05	Open
2	**30 (15%)**	**Literature Review & Methodology**				
2.1	20	State of the art literature review	Adian, Felix	KW40	KW46	Complete
2.2	10	Identify methodology	Adian, Felix	KW40	KW46	Complete
3	**50 (30%)**	**Data Acquisition & Pre-Processing**				
3.1	10	Set up computing environment	Adian, Felix	KW47	KW48	Open
3.2	20	Collect raw data	Adian, Felix	KW48	KW50	Not Started
3.3	20	Pre-process data	Adian, Felix	KW50	KW51	Not Started
4	**60 (25%)**	**Data Processing & Analysis**				
4.1	20	Insert data into PostGIS DB	Adian, Felix	KW51	KW01	Not Started
4.2	10	Optimize PostGIS DB	Adian, Felix	KW52	KW01	Not Started
4.3	10	Generate OGC services	Adian, Felix	KW02	KW02	Not Started
4.4	20	Construct Dashboard	Adian, Felix	KW03	KW04	Not Started
5	**40 (20%)**	**Dissemination**				
5.1	15	Writing documentation (wiki)	Adian, Felix	KW46	KW05	Not Started
5.2	15	Creating presentations	Adian, Felix	KW44	KW05	Open
5.3	10	Publishing results	Adian, Felix	KW02	KW05	Not Started
		Completion			KW05	

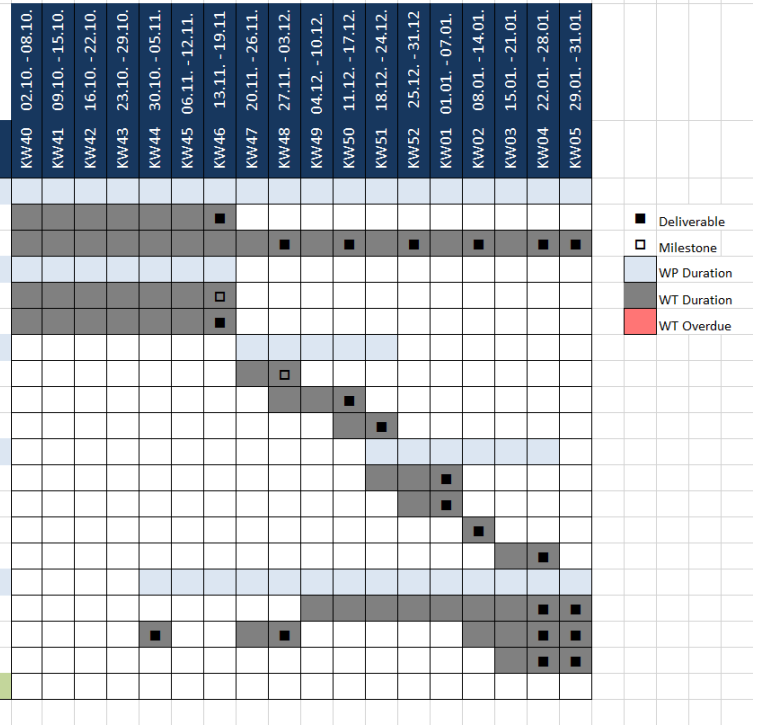

Figure 3 Gantt Chart

Risk matrix

In this table, please provide the important risk information. Please categorize the risks accordingly. ([L]ow, [M]edium, [H]igh], [C]leared)as well as your mitigation strategy. Please update this list accordingly during your project execution time frame.

No	Risk	Potential adverse impact	Risk level*	Risk management strategy	Responsibility
1	Inaccurate migration/spatial data from the German GENESIS platform	Could compromise the reliability and validity	L	Perform validation.	Adian Dawuda/Felix Schachtschneider
2	Technical difficulties/issues in automating data acquisition and preprocessing.	Delays in the project timeline	M	Allocate time for testing and debugging	Adian Dawuda/Felix Schachtschneider
3	Insufficient time management to complete the project as planned	Lead to incomplete or substandard project outcomes	L	monitoring of project progress/overview document	Adian Dawuda/Felix Schachtschneider
4	Problems with displaying the data accordingly	Could lead to false visually representation	L	Early and Continuous Testing and Feedback Loops	Adian Dawuda/Felix Schachtschneider

Additional comments

Add additional comments if necessary.

Comments

Approval

Please provide further information if necessary.

Approval		
Approval:	Date:	dd.mm.yyyy

Signature principal investigator	Signature project lead/contractor

Workload distribution

Describe the team workload distribution in % per WP

WP1: 50/50

WP2: 50/50

WP3: 50/50

WP4: 50/50

WP5: 50/50

Attachments

Attachment 1: Gantt Chart (monthly updated).