DAI-Labor
TU Berlin

Smart Energy System Management

A case study of an Autonomous Car

Project Plan

WS 2018/19

Smart Energy System Management: A case study of an Autonomous Car (WS 2018/19)

Group 3

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Project Plan

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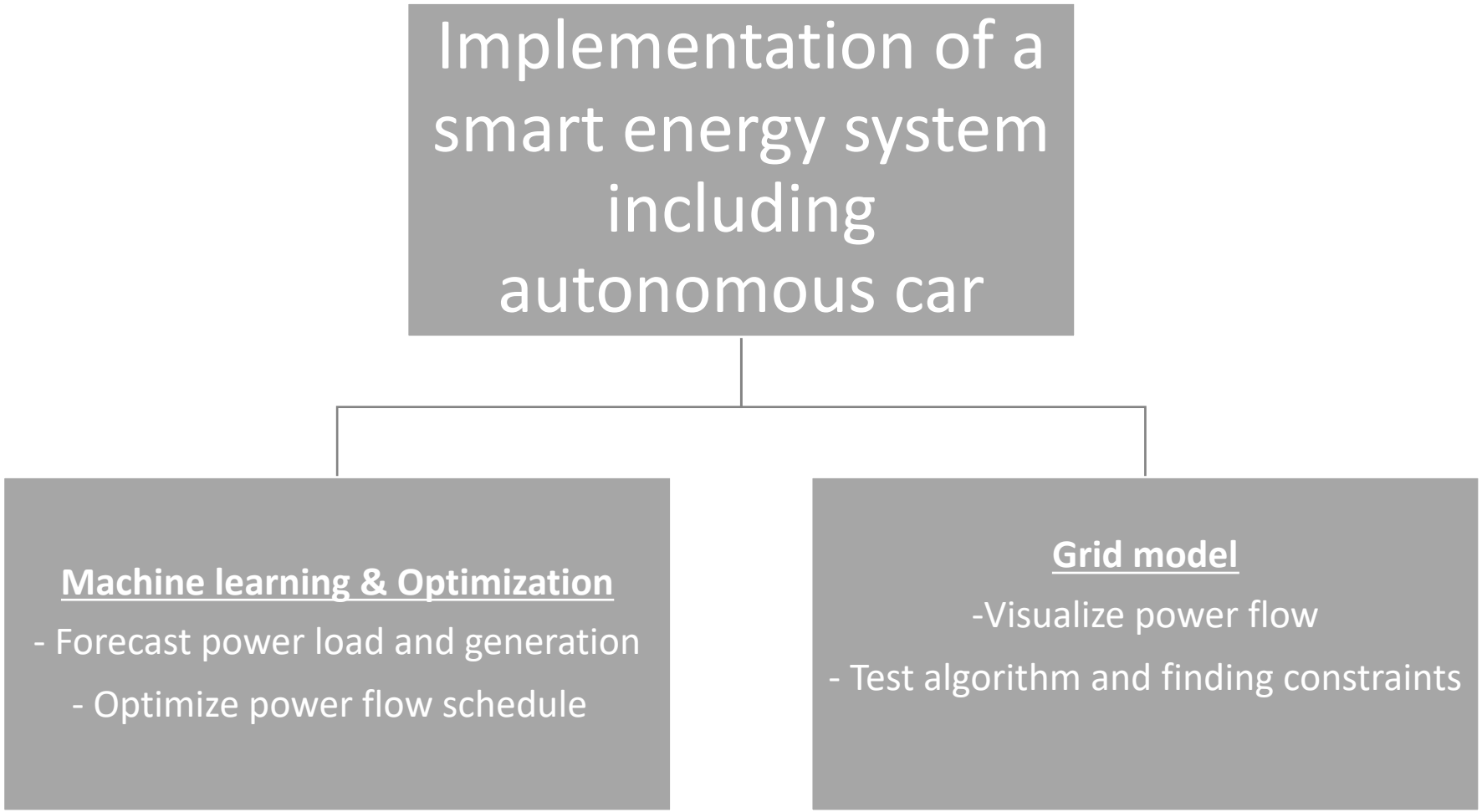
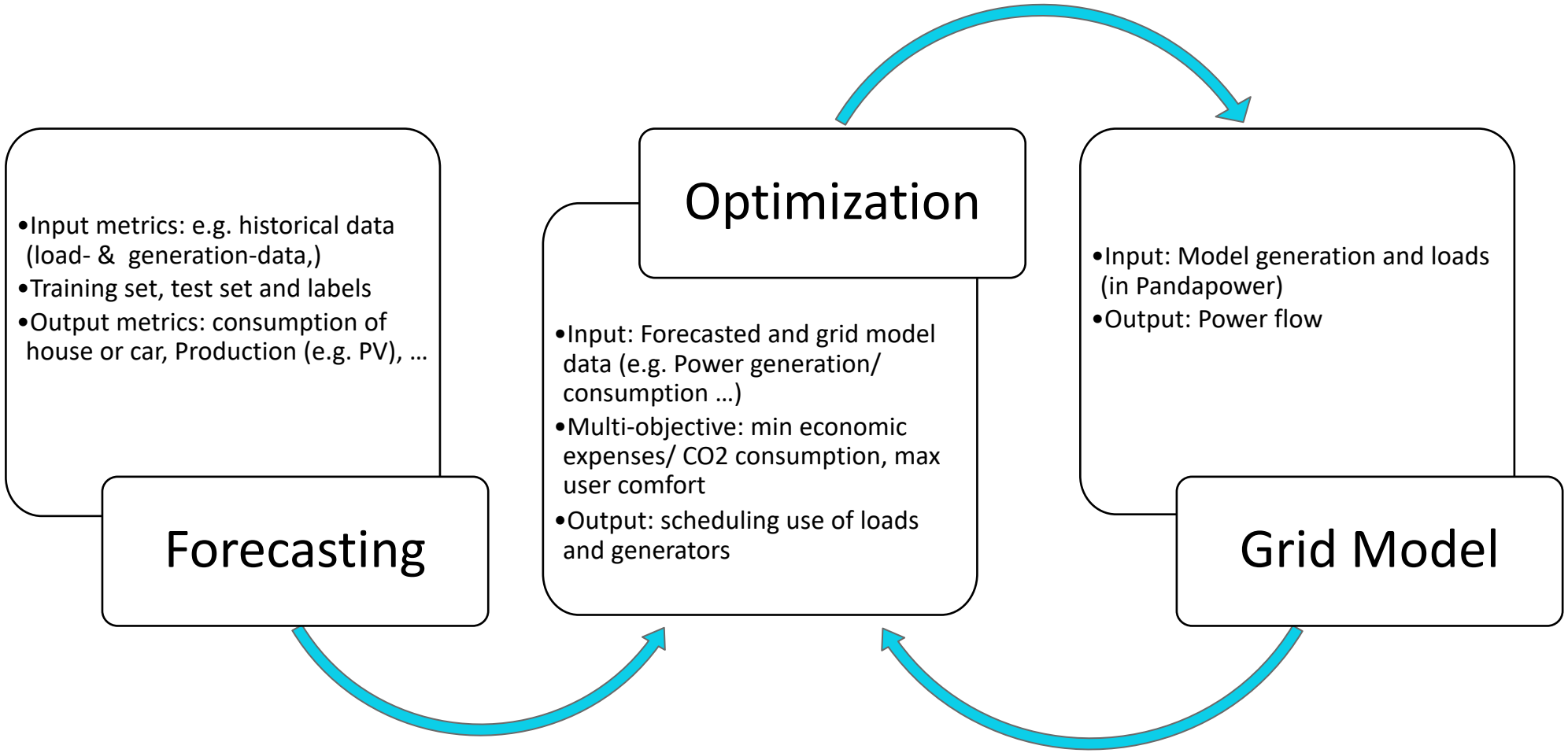
Project Description



Project Goals

1) Analyze historical data and build the model
2) Implement forecast
   a) power consumption
   b) power generation
3) Optimize energy flow under aspect of user preferences
   a) minimize energy cost
   b) minimize CO2 emission
   c) Maximize user comfort
4) Implement user interface:
   a) Give the user the possibility to adapt weight of defined objectives

Conceptual Overview



Project Tasks

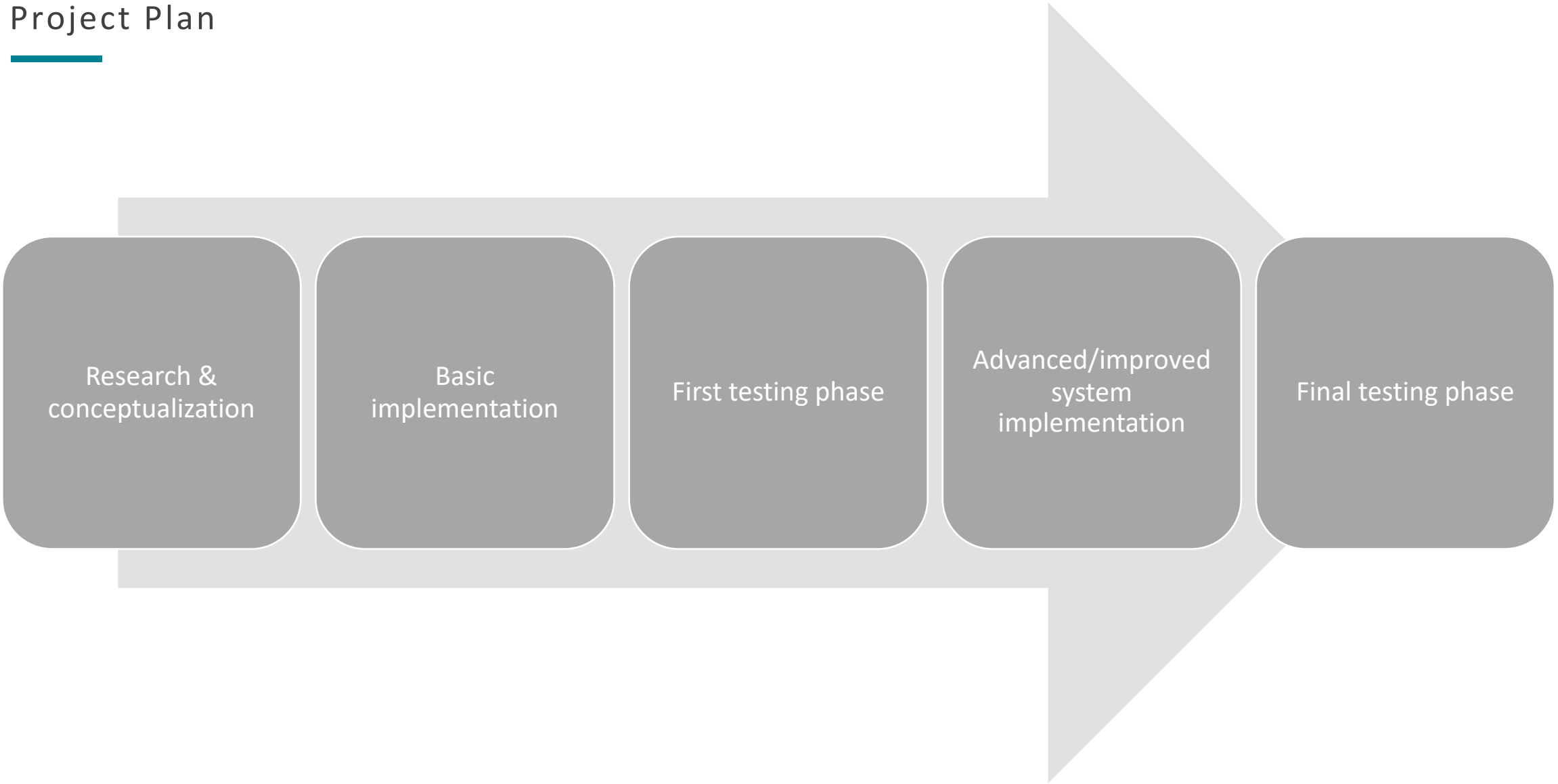
Goal	Task
Data preparation	Data analysis & preparation for machine learning task
	Discussion about objective, variables, constraints →task planning and distribution
Grid model	Implementation in python with pandapower library
Multiple machine learning models	Generation PV
	Consumption/generation Autonomous Electric Car (Prosumer)
	Consumption TEL
Optimization	Define objective function, constraints, decision variables
	Run with historical data
	Integrate forecasted data
User Interface	Implement a simple architecture
	Optical reprocessing of historical and forecast data for plotting

Organisation

- Using agile method
- Using tools: TUB Gitlab (code and issues) & Overleaf and OneDrive (organization and documentation)
- Weekly meeting for discussion of further task and challenges
- There will be roles : moderator, experts, documentation responsible

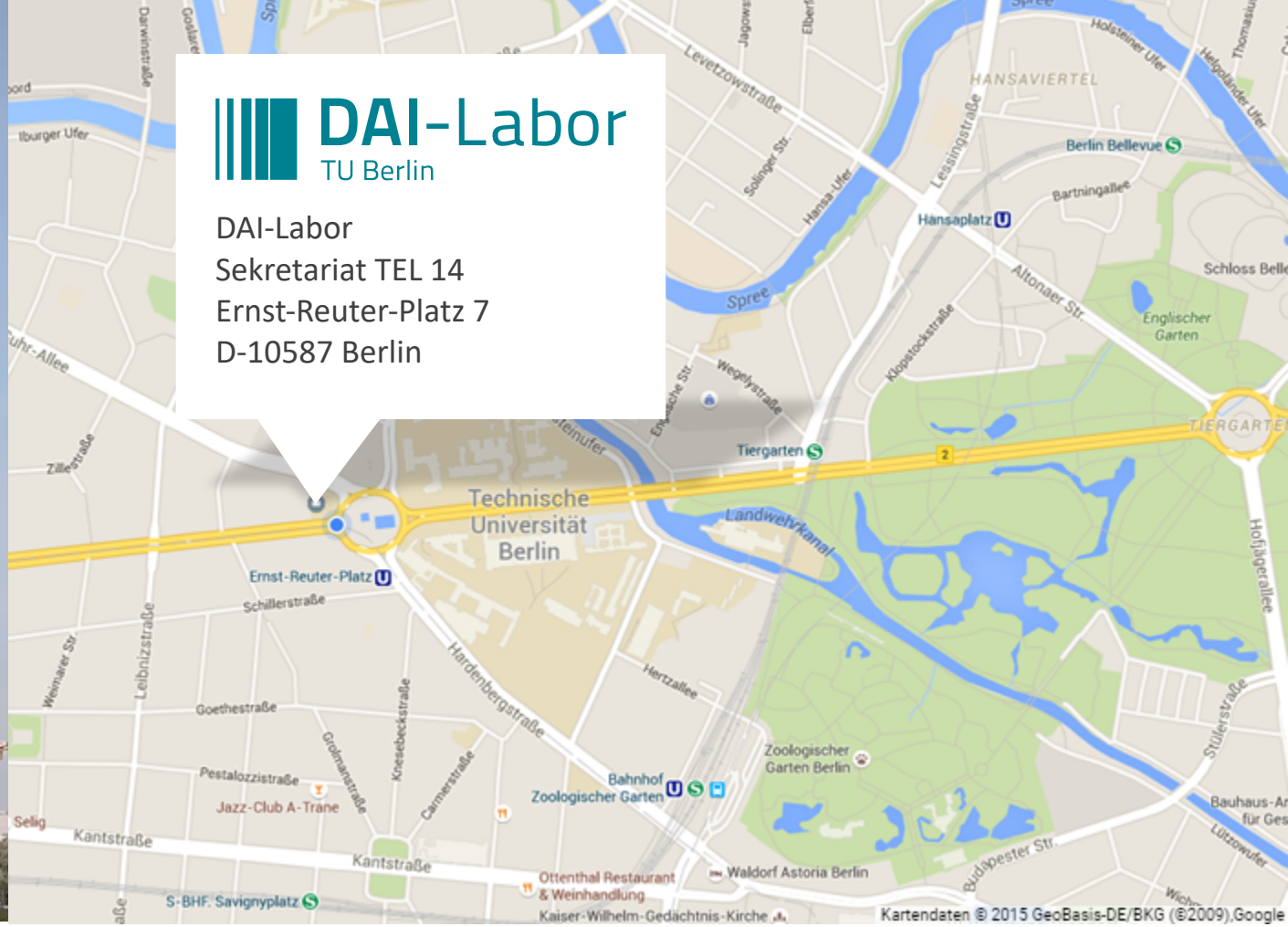
Team member	Studies	Expert' in …
Lucie	computer sciences	machine learning, forecasting during internship
Claudi	electrical engineering	focusing on energy
Luisa	energy engineering	focusing on renewable energy technologies and grid integration
Asma	computer sciences	machine learning, optimization, user interface
Lara	computer sciences	machine learning, data
Nikhil	computer sciences	machine learning, cloud computing, electrical eng background
Hanggai	computer sciences	machine learning, optimization,data analysis

Project Plan



Task Distribution Backlog

Week No	Due Date	**Milestones** and Task	Responsible person	Done
		presentation layout	Asma, Nikhil	x
		git: project plan	Lara, Nikhil	x
		google drive (include planning, documentation & presentations)	Luisa, Nikhil	x
		presentation: include tasks for upcoming week (see below)		x
		presentation: include project description (general motivation & goals)	Claudia, Nikhil	x
1	04. Dez	**Planning presentation**		
		Data analysis	Claudia, Luisa, Nikhil	
		architecture	Haggai, Asma	
		algorithm research	Lucie, Nikhil, Asma	
2	11. Dez	**Share information about data and research outcome (group intern)**		
3	18. Dez			
4	25. Dez	**Basic simple system**		
5	01. Jan			
6	08. Jan	**Milestone presentation**		
7	15. Jan			
8	22. Jan			
9	29. Jan	**Finish implementation**		
10	05. Feb	**Final presentation**		
11	12. Feb			



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