

NOT SO BIG: MAKING DATA LESS OVERWHELMING FOR DESIGNERS

The development of a tool for novice designers to deal with big data without overwhelmingness feeling

Appendix

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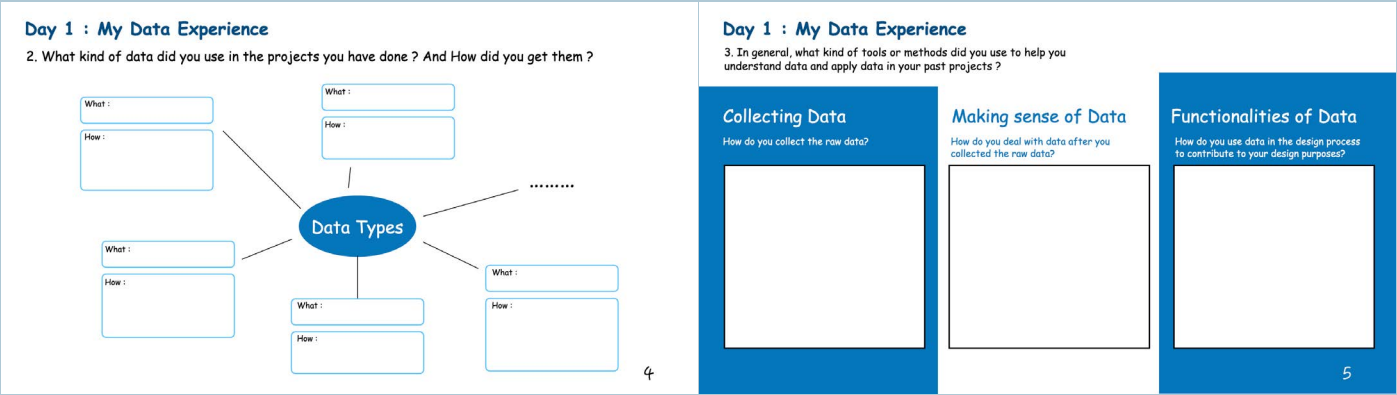
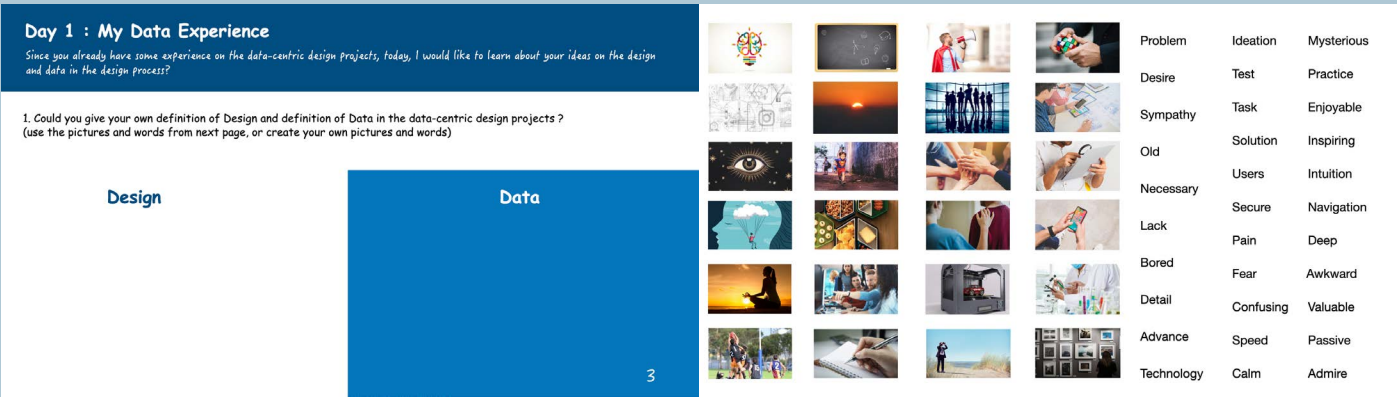
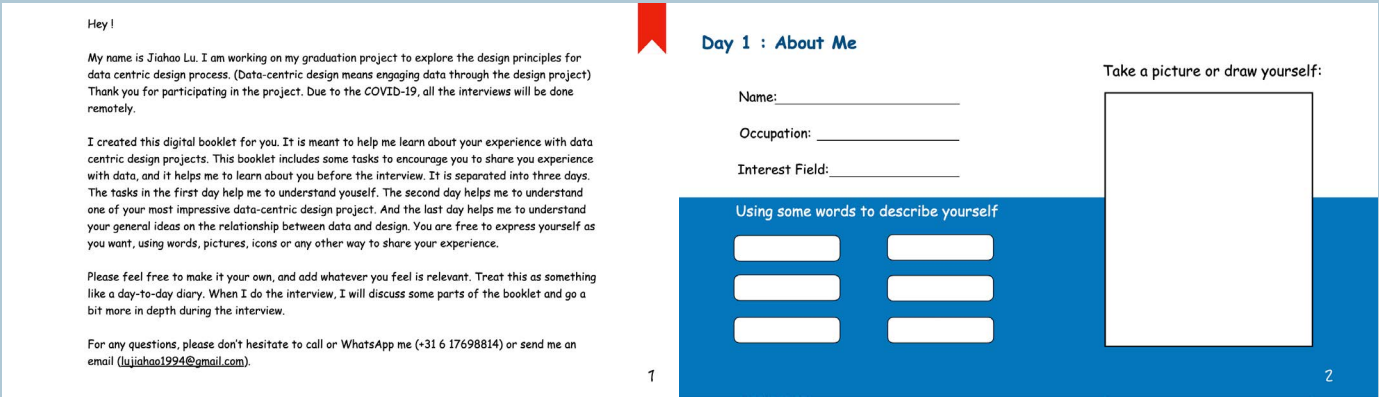
**DATA MANAGEMENT
PLATFORM** 16
Paper Version

**DATA MANAGEMENT
PLATFORM** 20
Prototype

PROJECT BRIEF 29

SENSITIZING BOOKLET

From user research



Day 2 : My Project Experience

Now thinking about one particular data-centric design project which is the most impressive for you. The following tasks would revolve around this project.

1. What is your most impressive data-centric design project?

1.1 What is the project about?

1.2 What's the goal of the Project?

6

Day 2 : My Project Experience

2. Now, recalling this project and thinking about how would you visualize the design process. Please map it considering the starting and ending point below.

Starting Point

Ending Point

3. In which stage did you apply data? And how did you analyze data at that moment (which methods and tools did you use) ? (Illustrate in the timeline above)

7

Day 2 : My Project Experience

4. Selecting the icons below (or create your own icons) which can express your feelings during the project, and putting them in the timeline on the previous page. Describing the feelings, and explain why you had these feelings.

Icon

Feeling:

Why:

Icon

Feeling:

Why:

Icon

Feeling:

Why:

Icon

Feeling:

Why:

Icon

Feeling:

Why:

8

Day 2 : My Project Experience

5. If you could involve data more in this projects, what kind of data would you involve, at which stage and how? (copy paste your illustration in this page and add the data you want to involve in it)

9

Day 3 : My Data-centric Design Experience

Today, you will remember all your experience of data-centric design projects and think about how is the applying data in the design process for you?

1. Based all your data-centric design projects, please describe three most inspiring moments and three most difficult moments below.

10

Day 3 : My Data-centric Design Experience

2. What I like most about engaging data in the design process?

11

Day 3 : My Data-centric Design Experience

3. What I dislike most about engaging data in the design process?

Day 3 : My Data-centric Design Experience

4. How would you describe the role of data in the design process? (use sketches, words or any other manifestations)

12

Thank you for your help on my graduation project ! !

**If it is possible, please bring some outcomes/design materials of your previous data-centric design projects to the interview.

If you have any comments and questions, please note down below.

INTERVIEW SCRIPT

From user research

Interview script

Start.

- Introduction of interviewers - TU Delft
- Thank them for filling it out
- Reasons and goals of the research
- This interview should take no more than one hour
- Inform about the recording and usage of the interview
- Consent explanation
 - Before we start, we will sign this consent form together since we will need to record this interview for further research.
 - Give the form: Please read the form and feel free to ask any question.
 - Sign

Start recording

Interview:

Part 1

How was your experience filling in the booklet?

- Were there any challenges you encountered when filling in the booklet?
- Were there any impressive things for your when filling in the booklet?

Now that you have done the sensitive booklet, could you tell me what is the "data-centric design" for you?

Q 1-1:
Why....

Q 1-3:
(show the content of this page)
Why did you choose these methods to deal with data?

- What kind of data did you use with this method?
- What were the results?
- Were there any difficult/ inspiring moments when you used these methods?
- Which methods/tools have been the most valuable and helpful for you?

Q 2-2 :
Lets look at the project you described in the booklet at day 2

How did you decide to involve data in this project?
Why did you choose to use this data at this stage?

- How did you get this data?
- Did you meet any difficulties during using this data?
- Which tools or methods did you use to understand and apply the data? Why?

Did you evaluate the project?

- How did you do that?
- Did the data play any role in evaluation?

How did you work with the other teammates like data scientist?

- How was the communication going

Q 2 - 4 :
At day 2, you described some moments, let's look at them

What did you do when you feel clueless?

- Did you use any tools/methods or ask for help? (use this prompt only if the participant has trouble answering)

What did you do when you feel confused?

- Did you use any tools/methods or ask for help? (use this prompt only if the participant has trouble answering)

What kind of insights did you get when you feel inspired?

- How did you apply data at that moment ? (use this prompt only if the participant has trouble answering)

What kind of insights did you get when you feel enjoyable?

- How did you apply data at that moment ? (use this prompt only if the participant has trouble answering)

To what extent it was useful to apply data in this project?

- Why?

Q 3 - 1:
Let's look at the page 11, you recalled these particular moments.

Could you tell me why do you think it is difficult/inspiring for you to apply data in the design process ?

- In what project did you meet these difficult moments/ inspiring moments?
- What kind of data did you use at these moments? Why did you think that this data is valuable for your project?
How did you get this data?
- How did you deal with that data (methods/tools) during the design process ?

Q3 - 4:
Why did you describe the role of data in this way?
How do you think about the relationship between the data and design?
Did you meet any challenging moments when try to manage their relationship?

- When was it ?
- How did you solve the situation?

Do you think it is valuable to involving data in the design process? why?

How did you deal with the relationship between data and design?

Ending of part 1

- Could you name the two most important insights on applying data in the design projects based on your projects experience?

- If I want to start a data-centric design project, could you tell me what to do first.
 - Why do you think it is important?
 - Which tools or methods would you highly recommended for data-centric design projects?
 - Why ?

Based on your previous experience, what would you do differently on dealing with data in a future project?

Part 2

How did the applying data in the design process changed overtime for you?

- what impact has this had on you?
- What are the differences between involving data in the design process and not?

What can data contribute to design based on your experience?

- What are the unique contributions that data has to the design project, comparing with other design materials ?

How is the relationship between the QL and QT?

Ending

- I've asked everything I wanted to. Is there anything you would like to add?
- Stop recording
- Thanks

Did you encounter any related researches about the data-centric design? If you did, could you share the related information with me?

CODE BOOK OF
GROUNDED THEORY
From user research

Code System	Memo		Frequency
Code System			387
Experts			41
	technical people in the team fast the iterative loop		1
	work with technology people helps get new ideas		1
	involve users/experts to iterate the data selection/analysis		1
	need data scientists in the team		33
	programmer help the designers understand data and do the design		1
	involving programmer makes the process flexible and fast		1
	data scientist helps the design practical		1
	programmers are essential in the software project		1
	a mixed team helps you fast the iterative loop		1
	mixed team makes the process efficient		1
	learn from data scientists along with the process		1
	communicate with data scientist on data needs be collected		1
	data scientist way is not generating solutions than are close t	close to people	1
	data scientist's abilities		0
	technical people brings new perspective and inspirations		1
	working with data scientists balance the design practice		1
	data scientists help on data analysis very well		1
	raw data is a mess and not cleaned, needs the data scientists		1
	need the data scientist to work together on technical stuff		1
	learn about data from data scientists		1
	data scientist : high quantity of data		1
	lack of communication between data scientist and designers		0
	No communication tool for designers : to talk with DS		1
	tool for designers and DS communicate with same language (code)		1
	designers and programmer separated makes the process hard		1
	data scientist do not know what the data is for		1
	the communication between the designers and DS is poor		1
	do not know the data scientists' capabilities		1
	work with people who are good at deal with QT		1
	work with data scientists		1
	data scientists are quite helpful and reassuring		1
	data scientists are required for some projects		1
	designers are not the data scientists		1
	involving data scientists in the design team is efficient		1
	work with data scientist		4
	work with different experts		1
	work with different stakeholders		1
	work with other teammates is Important		1
	invite experts on data collection (sensors)		1
	experts are important		1
	QT data & QL data are all needed in the design process		105
	Thick data		0
	Features of thick data		5
		qualitative research is necessary	1
		QL is necessary for a good design	1
		users may not be honest or forget when asking them	1
		QL is subjective form participants	1
		QL data is rich datasets	1
	qualitative data helps designers empathize with users		6
		empathy is important	1
		data helps the empathy	1
		humanscale makes the projects concrete and easy to communicate	1
		creativity and empathy rely on the qualitative data	1
		interview help empathize with users and get information	1
	Big data		77
	relationship between big data and design		9
		design is a process which makes data relevant	1
		data-centric: use design to understand data	1
		design is not driven by data, but enabled	1
		data in design is humanscale aspect of technology	1
		data decides the facts, designers decide the possibilities	1
		data is available -->how to use the possibilities	1
		data is important, but not determine	1
		role of data getting more and more important	1
		data is a necessary component of a design process.	1
	the features of Big data		11
		Deal with QT is difficult	1
		data connects with each other	1
		quantitative data cannot reveal the details behind the results	1
		leading the design process by "WHY" instead of "What"	1
		data has its limitations	1
		data is unorganized information	1
		quality of QT data depends on the context and the collection	1
		big data is not good for empathizing	1
		Quantitative data is clinical	1
		data is produced instead of collected	1
		data is also unpredictable, challenging and frustrating	0
	Big data in design process		4
		big data is more and more available and have a bright future	1
		applying data depends on the available tools	1
		using data is still underdeveloped in design	1
		more quantitative data will be involved in the design process	1
		because of the development of technology, time, money and efforts are less and less on collecting data	1
	data is used in the whole design process		14
		data in different stages of design process	1
		data makes design process better	1
		data in design solution	6
		data is used more in design and even used in design solution	1
		data as part of the solution	1
		data in the design solution is still a challenge	1
		data types decide the role of data in the design process	1
		use data after design process	6
	data as an inspiration		1
		brings fresh perspectives to the design process	1
		data triggers the in-depth research	2
		sensor data can be used to trigger The emotion part	1
		data provides inspirations	1
	data can provides more possibilities to design		7
		coding helps designers to design and implement concepts quickly	1
		data provides dynamic experiences	1
		data provide another sense than hearing, vision...	1
		data analysis provides possibilities	1
		provide insights on the possibilities	1
		data brings the openness	1
		data provides openness to the project	1
	data could do the design for some projects		3
		data can make decisions sometimes	1
		QT is important, may be used for certain stage in design proces	1
	data is the important design material		7
		Use Dummy data to design when lack of information	1
		data is the foundation of the design project	1
		all projects require data	1
		QT is a good tool, although it's complex	1
		get design requirements from data	1
		data as material in the design process facilitate the design	1
	data provides strong arguments		10
		design with data could be clinical	1
		design with data is very logical and without the intuition	1
		data is the foundation of your design, core elements	1
		QT provides concrete and convincing evidence on results	1
		involving data makes design more reliable	1
		use data to justify the design decision	1
		QT provides evidence	1
		data can be used to back up the design decision	1
		convince the project partners	1
		QT data provides strong arguments	1
	data shows the behavior of people		6
		use data to define the patterns	1
		learn about more crowds and communities with data	1
		QT only explain the facts	1
		Quantitative data can reveal significant details	1
		use data as part of research to understand behavior	1
	use thick data and big data together		17
		design and data support each other	1
		Data-centered: the goal need to be defined at the beginning	1
		QL research to prepare data collection	1
		use QL data to understand QT data in the context	1
		use QT data to design the interview structure	1
		doing research help designer to get touch with QT data	1
		Mix, QT for convincing stakeholders, QL for understand&develop	1
		QT data is concrete and solid than QL data	1
		mixing QL and QT in the design process	5
		the reasons behind QT miss, difficult for communication	0
		use QL to understand QT	1
		QL data and QT data both has their own advantages.	1
		need both QT and QL in design research	1
		mix QL and QT	1
	before the data collection & analysis		39
	be clear about the data source		5
		do the researches on the target group	1
		learn about what data source designers want, then collect	1

	think about the trustworthiness of data		1
		collect the good quality data, understand if i cann trust	1
			1
	existing data		8
		data source as another layer	1
		explore the existing data and find the relationship	1
		learn about what is known and not, before research	1
		look into the existing datasets first	1
		understand existing data and how it could be used for projects	1
		use the existing database is a easy way to get data	1
		understand users' needs and existing datasets help collect	1
		through understand better on the users' needs, the data that is required will be more and more clear. designers can make plans on data collection based on the existing data	1
			1
	know which data are needed before collecting		4
		some projects start with existing data instead of users needs	1
		understand customer needs before data	1
		It always analyzing and researching for information First Step	1
		make plans on how to collect data without bother users forehead	1
	make plans on data collection and analysis forehead		11
		start with qualitative Research	1
		know how to use data is the biggest problem	1
		learn about how the data is collected	1
		make plans for the data scientists on data collection&analysis	1
		designers define the data types to be collected and analyzed, the purposes of data application, find the data sources and capabilities of data analysis	1
			1
		making plans on data analysis	1
		designers focus more on collecting, dont know how to analysis	1
		do research with appropriate methods	1
		make plans on how to analyze data in advance	1
		know how to collect data and how to analyze	1
		know what data will be used for, and how to collect, in advance	4
	understand the context before looking at data		4
		decide the data type in advance	1
		learn about the project background(knowledge) first	1
		Make sure that i Understand the context than the neat	1
	understand the value and possibilities of data at the beginning		7
		designers may not need to learn about the data itself, while it is important for the designers to think about how the data could be used to meet the customers needs, what kind of data lacks and the possibilities of combination of different data types	1
			1
		learn about the technology and data at the beginning	1
		make sure there are enough data assets	1
		need to understand data and know how to use data	1
		learn about the relevant knowledge help you on data collection	1
		how to collect data and what kind of data should be collected	1
		understand the value, potential of data and technology	1
	collaborate with users on deal with data		4
		Don't overload people with irrelevant information	1
		involve users in the design process makes them feel ownership	1
		share the data, design in design process with users	1
		understand the importance of data with end-users	1
	data analysis		38
	analysis methods		5
		analysis on the wall is a valuable method	1
		analyze data with DIKW	1
		data sharing helps generate more insights and possibilities	1
		use ground theory to analyze data	1
		Use DIKW to analyze the product and services	32
	data analysis makes data meaningful for project		16
		cleaning and organizing data	1
		Data provides possibilities with Organizing and connecting	1
		connecting different data to make it meaningful	1
		add more dimension to the data makes interpretation clear	1
		combine more data to make it percise is how knowledge generated	1
		giving the data context and combining with each other can change data into information ,knowledge	1
			1
		trying out to find the connections	1
		use 3-D to interpret data	1
		find the connection between data is difficult	1
		understand data needs to connect with different data sources	1
		data can not be used alone	1
			1
		making arrangements is the creativity process	1
		organizing data is an opportunity to find the possibilities	1
		relevant data matters instead of data	1
		organize, reorganize, move and aggregate information	1
		organize data to make it clear and understandable	1
		raw data is a mess and need to be cleaned and organized	2
	data is affected by many elements		4
		the context affects the meaning of data	2
		different contexts explain data in different ways	11
	data needs to be translated into information		1
		analyzing data is empathizing with the users	1
		intuition can be very useful when analyzing data	1
		difficult to divide information and knowledge	1
		understand the reasons behind the behavior is more essential	1
		involve users in the data analysis	1
		discover the value of data	1
		there are endless nowadays, while it is difficult to make full of them. it could be the designers' abilities	1
			1
		the reason/emotion behind the behavior essential for designers	1
		the relationship between the data and needs	1
		information provides insights	1
		information is data in the context	1
		different info	29
	data collection		1
	Data collection is a big challenge for the designers		1
		collect data without bothering users	1
		ethical issues need to be considered	1
		involving users is complex	1
		too much data and data source are difficult for selection	1
		users dont want to enter data	1
		collecting data is the pain point	1
		let users put in data is difficult	1
		privacy issue need to be take care of	1
		collect data is difficult	1
	collect the right data		1
		Criteria is necessary for data collection	1
		designers can be aware of what kind of data should be collected	1
		gather and store the meaningful data	1
		go through different datasets to get the right data	1
	collecting data helps designers be empathy with users		1
	data collection approaches		0
		collect data by self monitoring	1
		collect data from different sources	1
		collect the data which participants are interested	1
		customer journey for data collection	1
		it's important to collect data before and after the design proc.	1
		collect data between the designing and redesigning.	1
		use prototype to collect data	0
		use prototypes to seek data source	1
		prototypes could be used to collect data	1
		using existing data or results is efficient	1
		more stakeholders and parties make the solution complete	1
	how data is collected affects the shape of data		1
	technology decide the data collection		1
	collect data to answer design questions		1
	data visualization		13
		data visualization is still underdevelopment	1
		data visualization is the start point for data analysis	1
		data visualization for data analysis	1
		data visualization to organize the relationship of data	1
		the purposes of data visualization	1
		use visualization and tools to encourage users enter data	1
		using data visualization to communicate with others	1
		data visualization is used to help designers understand data	1
		data visualization make messy data understandable	1
		visualization help the communication with end-users	1
		visualization facilitates the communication between users&system	1
		data visualization for communicating with different stakeholder	1
	data visualization is done by designers		1
	designers need to learn about data related knowledge		22
		code could help collect data	1
		data is confusing for the designers	11
		design education need to involve data related courses	1
		learn about the software and algorithm before working on it	1
		learn about data collection, analysis and visualization	1
		know about some languages could be useful for design	1
		designers dont know if the algorithm works in the end.	1
		designers need to learn about the data related technology	1
		designers are lack of data relevant knowledge	1
		designers still need to look at the data by themselves	1
		CS is a brand new field for designers, and takes time/ efforts	1
		Designs the design school where i worked with was more QL	1
		ages ago, design education teaches : designers are experts	1
		lack of QT data training in design education	1
	some ethical limitations on deal with data		1
		the connect between design and algorithm is weak	1
		using algorithms to deal with big data is efficient	1
		when meeting some technical problems, it's difficult to handle	1
		it is still a technical challenge for designers to handle data	1

	understand data and organize it is difficult		1
	learn about the function of code		1
	it's difficult to learn coding for designers		1
	read codes is easier than write codes		1
the design activities			12
	HCI: has a clear goal and function, make it easy-to-use		1
	connectivity is important for a data-centric design project		1
	connect the design work with implementation		1
	DESIGN activity is changing		1
	design is a uncontrollable process		1
	design is more about experiment than creativity		1
	human is the centre of design		4
	solution is based on customer's needs		1
	user's needs is the centre of design		2
the world is transferring into digital			1
design activities (methods and approachse) in the design proces			1
the role of desingers			45
	designers focus on the specialized fields		1
	mix of both design and tech skills		1
	designers are good at seeing big picture & connect specialists		1
	designers become teamleader		1
	designers need to hold the project		1
	designers become the team leader to facilitate communication		1
designers facilitate the communication between parties			23
	different mindsets between designers and technical people		1
	designers are communicator		0
	working at same space helps the communication		1
	communication is the biggest problem in design process		1
	cant make sure that teammates understand		1
	build communication bridge between end-users and data scientists		1
	communicate relevant and meaningful info with stakeholders		1
	communication between designers and DS is a challenge		1
	find right communication ways with end-users		7
	condense data for communication		1
	numbers donot mean anything for users, translating is necessary		1
	test is a way to communicate with the end-users in designproces		1
	users have access to their own data: more insights and ownershi		1
	designers decide what information should be shared with users		1
	communication with users is important		1
	the communication between data collection and data analysis		1
	the goal of communication:	get insight on developemnt; foresee dangerous situation; show the results of the thing which is being working on.	1
	translation between practice and computer data		1
	understand each other, through understanding data		1
	design is difficult to communicate sometimes		1
	bad communicaiton makes the soluton uncertainty	there is a gap between designers and data scientists on knowledges (both side)	1
	designers connect the end-users and data scientists		1
	designers help communication between DS and end-users		1
	designers play an important role in communication	designers could be the bridge between experts/end-users and data scientists.	1
learn about the user's needs and realize the design			7
	designers are better in empathize with the users		1
	designers are more about feeling and human perception		1
	designers could create things that are close to people		1
	empathy with users and know how to use information	is the feature which designers have and data scientists do not	1
	understand customers' needs and make trade-off		1
	design for the users,not designers make decisions themselves		1
the role of designer is changing			3
	designers' role havent been recognized still		1
	designers are replaced		1
the roles between data colletion and data analysis		the role of data collection and the role of data analysis should be seperated clearly. if it is one person who switches between the roles, the person need to change the mindsets in time and thoroughly. if there are two people, they need to communicate very well.	6
	designer are analysts		0
	designers are good at data analysis		2
	designers : high quality of data and intimate with data		1
	analysis QL data is the feature of designers		1
	mindsets between collection and analysis in time and thoroughly		1

EXPERIMENTS PROCESS

From Evaluation

EXPERIEMNT 1

Evaluation Brief

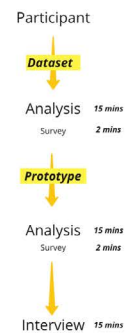
You are the designer of a project.
The goal of the project : improving the buyers' experience on Wish (a shopping website)

You will be provided a dataset on "Sales of summer clothes in Wish" which includes the data during the shopping experience. The dataset is abstracted from Wish.
You can ask for help from stakeholders/users/teammates (the facilitator will play these three roles if you need anyone in your analysis)

What you need to do is exploring the insights and findings from the dataset. The insights and findings could be some **hypotheses** *(like "A good car engine can increase speed" or "Tires have an effect on car speed")* ... whatever you think it could **be valuable for the project**. They will be handed to the data scientists, later.

The test will last for one hour in total. You will have 2 rounds of 15 minutes analysis. During the first round, you need to analyze big data by yourself. For the second round, you will be provided the prototype as tools to help you on analyzing. After each round of the analysis, you need to fill a survey. Afterwards, there is a 15 minutes interview in the end, for reflecting the big data analysis experience.

Schedule



Item ID	Item Name	Item Category	Item Price	Item Sales	Item Rating	Item Description	Item Image	Item Location	Item Status	Item Date	Item Time	Item User	Item Device	Item Browser	Item OS	Item Screen Size	Item Resolution	Item Language	Item Currency	Item Country	Item City	Item State	Item Zip	Item Phone	Item Email	Item Address	Item Postal Code	Item Latitude	Item Longitude	Item Timezone	Item Currency	Item Country	Item City	Item State	Item Zip	Item Phone	Item Email	Item Address	Item Postal Code	Item Latitude	Item Longitude	Item Timezone
1	Item 1	Category 1	Price 1	Sales 1	Rating 1	Description 1	Image 1	Location 1	Status 1	Date 1	Time 1	User 1	Device 1	Browser 1	OS 1	Screen Size 1	Resolution 1	Language 1	Currency 1	Country 1	City 1	State 1	Zip 1	Phone 1	Email 1	Address 1	Postal Code 1	Latitude 1	Longitude 1	Timezone 1	Currency 1	Country 1	City 1	State 1	Zip 1	Phone 1	Email 1	Address 1	Postal Code 1	Latitude 1	Longitude 1	Timezone 1
2	Item 2	Category 2	Price 2	Sales 2	Rating 2	Description 2	Image 2	Location 2	Status 2	Date 2	Time 2	User 2	Device 2	Browser 2	OS 2	Screen Size 2	Resolution 2	Language 2	Currency 2	Country 2	City 2	State 2	Zip 2	Phone 2	Email 2	Address 2	Postal Code 2	Latitude 2	Longitude 2	Timezone 2	Currency 2	Country 2	City 2	State 2	Zip 2	Phone 2	Email 2	Address 2	Postal Code 2	Latitude 2	Longitude 2	Timezone 2
3	Item 3	Category 3	Price 3	Sales 3	Rating 3	Description 3	Image 3	Location 3	Status 3	Date 3	Time 3	User 3	Device 3	Browser 3	OS 3	Screen Size 3	Resolution 3	Language 3	Currency 3	Country 3	City 3	State 3	Zip 3	Phone 3	Email 3	Address 3	Postal Code 3	Latitude 3	Longitude 3	Timezone 3	Currency 3	Country 3	City 3	State 3	Zip 3	Phone 3	Email 3	Address 3	Postal Code 3	Latitude 3	Longitude 3	Timezone 3
4	Item 4	Category 4	Price 4	Sales 4	Rating 4	Description 4	Image 4	Location 4	Status 4	Date 4	Time 4	User 4	Device 4	Browser 4	OS 4	Screen Size 4	Resolution 4	Language 4	Currency 4	Country 4	City 4	State 4	Zip 4	Phone 4	Email 4	Address 4	Postal Code 4	Latitude 4	Longitude 4	Timezone 4	Currency 4	Country 4	City 4	State 4	Zip 4	Phone 4	Email 4	Address 4	Postal Code 4	Latitude 4	Longitude 4	Timezone 4
5	Item 5	Category 5	Price 5	Sales 5	Rating 5	Description 5	Image 5	Location 5	Status 5	Date 5	Time 5	User 5	Device 5	Browser 5	OS 5	Screen Size 5	Resolution 5	Language 5	Currency 5	Country 5	City 5	State 5	Zip 5	Phone 5	Email 5	Address 5	Postal Code 5	Latitude 5	Longitude 5	Timezone 5	Currency 5	Country 5	City 5	State 5	Zip 5	Phone 5	Email 5	Address 5	Postal Code 5	Latitude 5	Longitude 5	Timezone 5

Whole Sheet

<https://drive.google.com/file/d/1M7jUmYxGDZ1r2P30XjzNZTQdJZodqh5/view?usp=sharing>

15 minutes

Step 1

<https://drive.google.com/file/d/1M7jUmYxGDZ1r2P30XjzNZTQdJZodqh5/view?usp=sharing>

Insights and Findings

Survey link

https://docs.google.com/forms/d/e/1Fpw2Ueyd1_m0h9w4mVJLM0x0p0G0V0eWap0S0w0153300w0w0d0m0w0p0153300



15 minutes



Insights and Findings

Survey link

https://docs.google.com/forms/d/e/1Fpw2Ueyd1_m0h9w4mVJLM0x0p0G0V0eWap0S0w0153300w0w0d0m0w0p0153300

EXPERIEMNT 2

Project Brief

You are the designer of a project. The goal of the project : improving the buyers' experience on Wish (a shopping website)

You will be provided a dataset on "Sales of summer clothes in Wish" which includes 12 types of big data about shopping experience. The dataset is abstracted from Wish.

What you need to do is using the platform to organize the big data from the dataset. You can ask for help from stakeholders/users/teammates (the facilitator will play these roles if you need anyone in the process)

Dataset

https://drive.google.com/file/d/1UwkADZ5LGyATdLxrf1e4_2SoquN2FhhM/view?usp=sharing

Preparation

Collection

Analysis

item_img	price	retail price	units_sold	views_ad_boosts	rating	rating_count	rating_five_count	rating_one_count	tags	shipping_option	price_freight	agency_banner	
2020 Summer Vests	54	14	100	0	3.79	54	28	0	Summer Fashion vest	4	1		
Women's Casual Shirt	8	22	20000	1	3.45	6135	2268	1077	Mini women dress	2	1		
2020 New Arrival Vests	8	43	100	0	3.57	14	5	3	Summer casual vest	3	1		
New Summer Card T	8	8	5000	1	4.05	579	295	38	Summer Short Card T	2			
Women Summer Shirt	2.72	3	100	1	3.1	25	6	6	Summer Plus Size L	1	1		
Plus Size Summer V	3.52	9	10	0	6	1	1	0	Deep V Neck Summer	1			
Women Fashion Lace	7	8	80000	0	3.84	6742	3172	757	Women Fashion Lace	2			
Women's Raglan Turt	12	11	1000	0	3.76	286	129	31	Women's Fashion Lace	3			
Women's Summer Co	11	84	100	1	3.47	18	6	3	Mini dress summer co	2	1		
Summer Women Plus	5.78	22	8000	0	3.6	687	287	112	Summer Summer Plus	2			
Women's Fashion Su	5.79	5	1000	0	3.48	613	245	125	Summer Plus Size L	2	1		
Summer Body Hing	6	8	100	1	3.91	15	3	3	Summer Plus Size L	2	1		
New Women's Summer	1.81	6	1000	1	3.45	141	49	25	Summer Women Shirt	1			
Women Fashion Lace	5.79	42	1000	0	3.32	121	36	19	Summer V-neck summer	2			
2019 Summer Items	3	2	20000	1	3.46	2487	864	207	Summer Fashion Lace	1			
Summer Fashion Plus	11	81	1000	0	3.92	426	204	45	Summer Plus Size S	3			
New Summer Women	11	10	10000	0	3.72	2058	840	239	Summer Fashion vest	2			
2018 New Fashion V	6	29	100000	1	3.63	11980	6290	1849	Summer Plus Size L	1	1		
S Color Plus Size Su	9	9	9	20000	0	3.82	5479	2409	977	Summer Fashion Lace	3		
S-Size Zipper Vest T	7	7	1000	0	3.67	214	87	25	Summer Summer Vest	2	1		
Top Summer Lace S	11	10	8000	0	3.84	1183	506	106	Fashion Plus Size L	3			
Summer Women Plus	6	8	20000	0	3.6	3952	1437	515	Summer V-neck Fashion	2			
One-Shoulder Women	11	28	1000	0	3.38	72	27	16	Summer V-neck Fashion	2			
Summer Fashion Vest	7	6	8000	1	3.67	610	213	89	Summer Summer Vest	2	1		
New Ladies Fashion	5.71	5	1000	0	3.75	678	290	79	Summer V-neck Fashion	2			
2019 Summer Fashion	9	80	1000	0	4.15	167	123	42	Summer V-neck Fashion	3			
New Women Lace Co	9	9	1000	0	4.03	216	105	12	Summer Fashion vest	3			
Spring Summer Fashion	5.65	5	20000	0	4.29	2966	1751	109	Summer V-neck Fashion	2	1		
2020 New Fashion S	1.74	2	100	1	4.26	12	7	1	Summer V-neck Fashion	1			
4 Color Women's Plus	8.98	6	1000	0	4.06	331	196	23	Summer Summer Plus	2			
HOMER Fashion L	14	79	100	0	4.08	31	17	1	Summer Plus Size L	4	1		
Beest Branding Cam	5.65	6	1000	1	4.37	217	137	5	Summer V-neck Fashion	2			
Summer Women Sli	8	7	1000	0	3.61	443	216	88	Summer Summer Plus	3			
Solid Color T-shirt	2.56	3	5000	0	3.44	1136	418	197	Summer Fashion Vest	5	1		
Women Fashion Vest	9	8	10000	0	3.8	1231	555	138	Summer V-neck Fashion	3			
Floral Print Card Sli	11	10	1000	0	4.16	274	162	21	Summer Summer Plus	3			
Summer Fashion Item	8	17	100	1	2.75	6	2	3	Summer Fashion Vest	3			
New Women Ladies	14	12	8000	1	4.08	643	385	63	Summer Fashion vest	3			
Women's Cotton Star	5.8	8	100	1	3.83	6	3	1	Summer Fashion Shirt	1			
S Color Women's Plus	13	13	1000	0	4.16	158	82	12	Summer Plus Size L	3			
Sexy Women Casual	9	81	5000	0	4.26	5358	3111	222	Summer Mini Fashion	3	1		
Women's Summer Plus	7	68	10	0	1.6	2	0	1	Summer Fashion vest	2			
NEW Bare Bull Summer	12	14	100	1	3.79	24	11	4	Summer Short Card T	1			
Summer New Women	3.89	40	100	0	3.83	89	22	12	Summer Short Card T	1			
New Fashion Women	8	9	10000	1	3.62	3208	1487	335	Fashion Tops & Blouse	1	1		
Women Spring and L	5.84	56	100	0	3.28	36	11	6	Summer off shoulder	1			

Whole Sheet

https://drive.google.com/file/d/1UwkADZ5LGyATdLxrf1e4_2SoquN2FhhM/view?usp=sharing

Data Card

Data Name

Data Types

What is the data ?

Data Source

How would you collect it ?

Tags

#Keywords

Content

Comments

Collected

Name of data

Name of data

To Be Collected

Name of data

Name of data

state_orig

price

retail_price

units_sold

views_ad_boosts

rating

rating_count

rating_five_count

rating_one_count

tags

shipping_price

urgency_banner

Data Map

Stages

Activities

Activities

Activities

Activities

Activities

Data

Emotion

Co-creation Board

Relationship

Share Views

Relationship - Board

Real Board

Relationship

Share Views

Relationship - Board

Real Board

Relationship

Share Views

Relationship - Board

Real Board

Relationship

Share Views

Relationship - Board

Real Board

Data Group

Description

Comments

Relationship Map

13

14

DATA MANAGEMENT PLATFORM

Prototype



DATA MANAGEMENT PLATFORM

Paper Version

Data Name							
Data Type	Data Source	Data Type	Data Source	Data Type	Data Source	Data Type	Data Source
Keywords:		Keywords:		Keywords:		Keywords:	
Data Type	Data Source	Data Type	Data Source	Data Type	Data Source	Data Type	Data Source
Keywords:		Keywords:		Keywords:		Keywords:	

Print at the back side of the data cards

Content:

Content:

Content:

Content:

Print at the back side of the data cards

Content:
24

Content:

Content:

Content:

STAGE

DATA

*Stick Data
Cards Here*

*Stick Data
Cards Here*

*Stick Data
Cards Here*

*Stick Data
Cards Here*

*Stick Data
Cards Here*

Emotion

Draw the emotion curve

Description

Comments

Relationship Map

Draw the relationship among Data Cards Here

Stick Data Cards Here

Stick Data Cards Here

PROJECT BRIEF

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

! USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME

Save this form according to the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !



family name Lu 4178
initials J given name Jiahao
student number 4877136
street & no. _____
zipcode & city _____
country _____
phone _____
email _____

Your master programme (only select the options that apply to you):

IDE master(s): ☐ IPD ☐ Dfl ☒ SPD

2nd non-IDE master: _____

individual programme: - - (give date of approval)

honours programme: ☐ Honours Programme Master

specialisation / annotation: ☐ Medisign

☐ Tech. in Sustainable Design

☐ Entrepreneurship

SUPERVISORY TEAM **

Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair Jacky Bourgeois dept. / section: IoT/SDE
** mentor Milene Gonçalves dept. / section: MOD/DOS
2nd mentor _____
organisation: _____
city: _____ country: _____

comments
(optional)

⋮

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..



Second mentor only applies in case the assignment is hosted by an external organisation.



Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair Jacky Bourgeois date - - signature _____**CHECK STUDY PROGRESS**

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair. The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: 30 ECOf which, taking the conditional requirements into account, can be part of the exam programme 30 EC

List of electives obtained before the third semester without approval of the BoE

☒ YES all 1st year master courses passed☐ NO missing 1st year master courses are:name C. van der Bunt date 02 - 06 - 2020 signature _____**FORMAL APPROVAL GRADUATION PROJECT**

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **. Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks?
- Does the composition of the supervisory team comply with the regulations and fit the assignment?

Content: ☒ APPROVED ☐ NOT APPROVEDProcedure: ☒ APPROVED ☐ NOT APPROVED

comments

name Monique von Morgen date 09 - 06 - 2020 signature _____**Data-Centric Design Toolbox for applying data in the design process**

project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 20 - 05 - 202009 - 10 - 2020

end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

From the internet to the sensors in wearable devices, people leave their digital traces behind both online and offline. Data is getting ubiquitous and cheap. Through analyzing business data, companies could have a better understanding of their business and markets, and timely business decisions could be made. To make full use of data, companies start to put pressure on their design agencies to incorporate data into their ways of working (Schwartz 2019).

According to Christian Rudder (Rudder 2014), "It's like looking at Earth from space; you lose the detail, but you get to see something familiar in a totally new way." Using data properly provides designers a more comprehensive view of the problems. However, design does not rely on the data but also on the ideas, intuition, and innovations. Too much data may trap the designers in a state of analysis paralysis (Pavlisca 2015). The project could help the designers understand how to apply data in the design process well and how to perceive the positions of data and design in each project and even in each stage of the project properly. The relationships between data and design could be categorized into three terms: data-driven design; data-informed design and data-aware design. Managing the relationship for the different situations need the designers to have the data mindset (figure 1) (King, Churchill, and Tan 2017). A data mindset is essential for balancing the relationship between the data and design.

The primary stakeholder of the project is the designers. They are always developing new possibilities for delivering a better design outcome. Integrating data is the direction where some designers have already tried to explore and it could bring new perspectives in the design process. Companies and users are secondary stakeholders. Companies are interested in exploring the value that data can bring to their products. For the users, they want more precise questions to be targeted and solved, and better user experiences to be provided.

There are some opportunities that I noticed from the current situation. Data is a new field for the most of the designers. They often lack the knowledge and expertise to deal with data effectively and appropriately. When data is involved in the design process, designers do not know how to manage the relationship between data and design to make sure that they will support each other in the design process. At the same time, since my main network is within the faculty, it will be a challenge for me to contact the designers from design agency or companies to take apart in the research under the COVID-19 situation.

1. King, Rochelle, Elizabeth F. Churchill, and Caitlin Tan. 2017 "Designing with Data : Improving the User Experience with A/B Testing." 369.
2. Pavlisca, Pamela. 2015 "Data-Informed Product Design." 39.
3. Rudder, Christian. 2014. Dataclysm: Who We Are When We Think No One's Looking. First edition. New York: Crown Publishers.

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introduction (continued): space for images

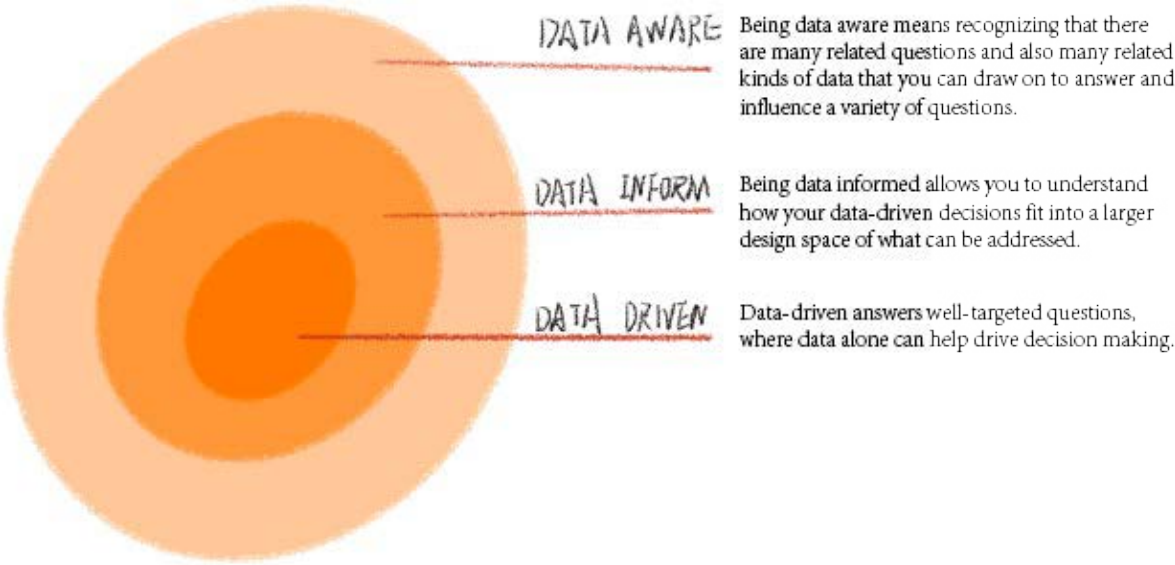


image / figure 1: Data mindset (King, Churchill, and Tan 2017)

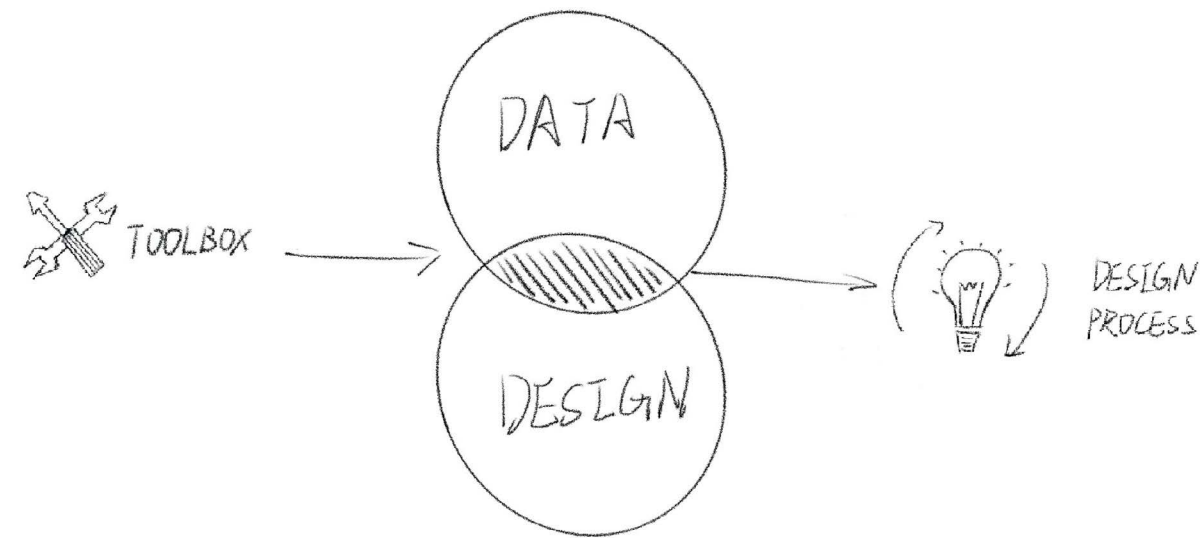


image / figure 2: The goal of the project

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

The problem I would target in the graduation project is not if designers should use data in the design process, but how to use it. The answer of the problem will help designers position the data and design properly in each project. There are already some researches on how to use data in the research stage like collecting customer insights from data, but it lacks some tools or principles to instruct designers to apply data in their design process. There are some of the solutions I could achieve in this graduation project.

To come up with the solution to the problem, I would research the following questions:

1. How could data be applied in the design process ?
2. What kind of role data will play in the design process?

Through Research Question1, I will learn about how designers deal with data in their projects now. I will focus on which stage of the project involves data and what kind of approaches are used. With Research Question 2, I will understand what kinds of relationship between design and data could augment the whole design process and be beneficial for the project.

This project will take place in the context of designing for wheelchair user's wellbeing. Internet-connected wheelchairs will provide data material for the study. Therefore, the toolbox will be verified with this data material in the end.

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

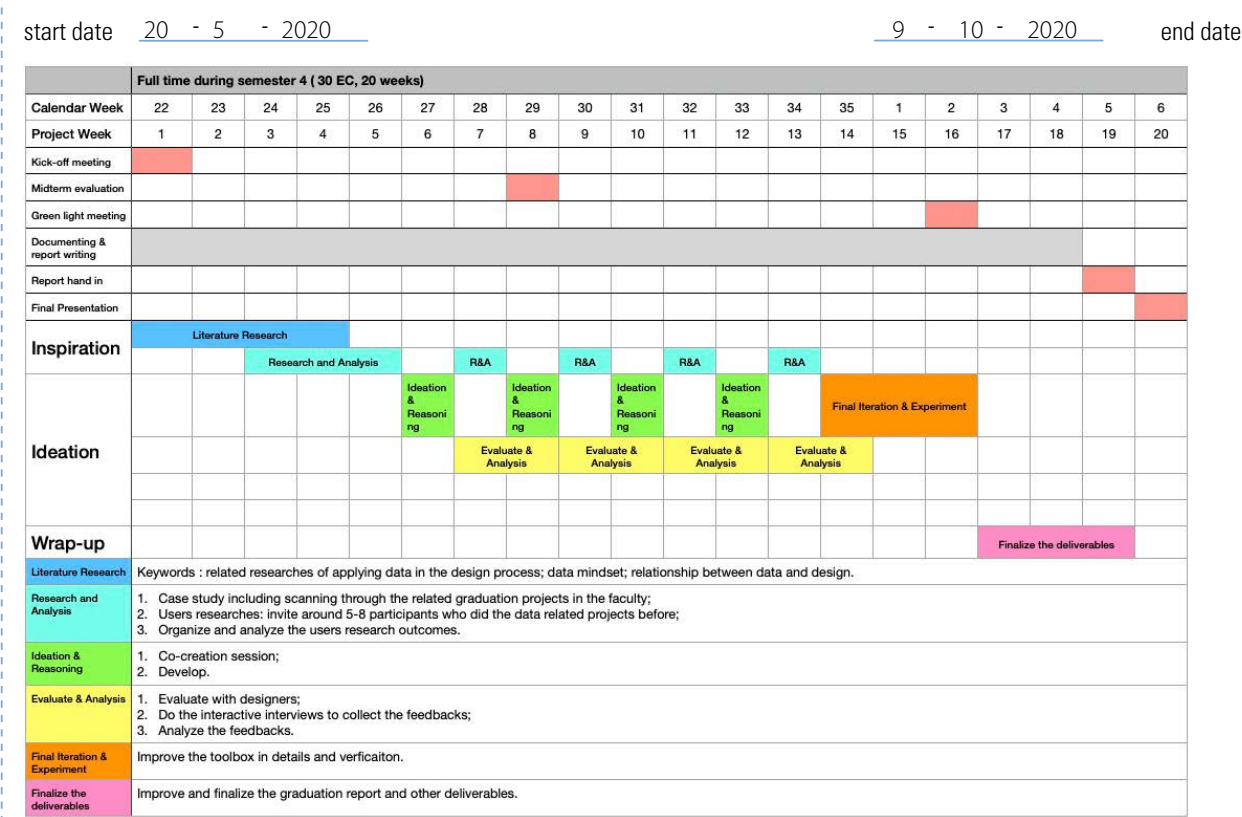
For the project, I will come up with the design principles for the designers to apply data in the design process and help them build a data mindset. Research studies and case studies on the data related design projects will be conducted to understand how designers deal with data now. Co-creation sessions will be held with designers to understand their experiences and needs. Some tests will be designed to test the feasibility fo the principles in the end.

A data-centric design toolbox will be delivered as the final outcome of my project. It will be a collection of the design principles with some guidance. Through research studies and case studies on how designers deal with data, Some insights on the relationship between data and design will be captured. From that, design principles will be deduced. And some sessions will be hold to iterate and develop them. To help the designers understand and implement the designers principles better, some methods might be provided at the end of the project, as the guidance.

The final solution will provide designers some insights on how to apply data in the design process and balance the relationship between data and design. Designers will have a strategic way of thinking about if applying data is beneficial for the project, at the very start, and they will know when and how to apply data in the design process.

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.



The project process can be mainly divided into three stages: Inspiration; Ideation; Wrap-up.

During the Inspiration, I will do the literature review, case study and surveys. Through these research studies and case studies, insights on how to manage the relationship between data and design would be provided.

During the Ideation phase, several iterations will be conducted to help me formulated better the design principles. Designers will be invited to take part in the sessions to review and evaluate the principles. At the end of the stage, a data-centric design toolbox will be designed and verified.

In the last phase which is the 4 weeks after the Green Light, I will wrap up the project, finalize the graduation report and work on the poster and other deliverables. Last but not least, I will prepare the final presentation.

Note: Considering the outbreak of COVID-19, to maintain the social distance, some design methods and sessions can not be conducted as it should be. To be able to work under this condition, there are some special measures:

1. Interviews will be done with online video calls; 2. Sessions will be held online with some digital tools such as Miro and Skype.

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, Stick to no more than five ambitions.

Motivation:

Data is a topic that is hot and can not be ignored in every industry. Especially, the design industry, as an interdisciplinary major, should always be open and explore the possibilities. During my internship in the customer experience department at KLM, I noticed that the design team collaborates with the IT team to understand their customers better. They collect users' data from Twitter, Facebook, and other social media and analyze these data to look for the pain points and needs. Although the relationship between the designers and data scientists is simple and flat in the department, It is still a brand new experience for me and I start to think about the relationship between design and data.

This project focuses on data application in the design process. With the development of the technologies, data is easier and easier to get. According to the data-centric design lab, "It is becoming a critical design material." It is time for the designers to realize the multiple possibilities that data can provide. Personally, I am also very interested in data science and learning python by myself now.

Ambitions:

Through working on this project. I would like to practice my skills in project management. The graduation project would be organized by myself. It is the change that I can learn more about project management from the beginning to the end, especially on the time management and resource organization.

I believe that involving data in the design process is the coming trend of design. I would like to help the designers to go through this transition. I hope that my final deliverables of the project could help the designers explore the value of data in the design process. Meanwhile, I would like to learn more about the data mindset and practice it during the project. It would be a necessary quality in this age of information explosion.

Last but not least, I would like to improve my English academic writing skills. I plan to keep doing the research on the related fields as a Ph.D. after graduation. It requires good writing skills. I will take this chance to practice it.

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.