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Executive summary

This report is about the data privacy of the 3-D model used and developed in Ruggedised. The 3-D model is a visualization of previously only 2-D visualized information, such as maps and sensor data. The 3-D model spoken about in this report is an extension of an existing model (Rotterdam 3-D, which anyone can visit at https://3drotterdam.nl/#/) combined with a new operations platform. This operations platform combines datasets from multiple sources, government and privately owned.
This report describes the privacy questions regarding the 3-D model used in Ruggedised. It provides the existing answers and the necessary investigations to answer these questions properly. Which means that this report doesn't describe a finished process but should be used as a description of the current situation and a first step towards guaranteeing proper privacy security with use of the 3-D model for Ruggedised.
Because this privacy question is new and accurate knowledge is not yet fully developed within the team, it is also possible that there are more risks than can be overseen at this moment. That must be considered always when planning and discussing the privacy questions.

To know if the 3-D model meets the current privacy regulations the following questions need to be answered about every data as specifically and detailed as possible:
-What is the data source?
-What specific data is collected?
-Who owns this data?
-What are the agreements with the data owner and the operations platform to process the data?
-With what purpose is this data collected?
-How is this data collected?
-Where is the data collected?
-How is the data processed/used?
-Who is responsible for the legal assessment of the processing of the data for this specific purpose?
- How long will data be held for and how will it be securely deleted?

Information about the processing of the data lacks information. This information is essential as it tells us for example who can view the data and if this is in line with the purpose. If not, this might be a privacy violation. Also, most information about agreements made with data-owners is missing. For Eneco and RET there probably are agreements made, but these are missing in the description of Innovation actions where the purposes of these data-collections are described. For building owners and owners of charging poles these agreements must be made in the future for agreeing on cooperating with the system and accepting the Eneco Building Managers. For the municipally owned data that will be used externally an investigation should start into who should be agreeing to the sharing and potentially publishing of this data. This should be done with the owners of all different data sets used currently in the Rotterdam 3-D model.
Then there is also still a lot of unclarity about the specific data that are being collected. Datasource owners can collect a lot of different types of data, a public armature can have a camera, sound recorder and infrared sensor or can merely collect data about the functionality of the armature itself. There is no concluding information written on a lot of the data sources and these uses should be framed more specifically to guarantee privacy security.
A privacy impact assessment can be done to assess the privacy impact of the different processing methods of specific types of data. Every responsible party should do this for every single purpose that they have for specific data.
The DPIA's will highlight potential privacy-risks currently unseen and other privacy obstacles that might impede the 3-D model. In some cases, it is even obligatory to do such an assessment. All responsible parties should consult a privacy officer to investigate the necessity and potential obligation for all data processing methods they are responsible for.

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1. Introduction

This report is about the data privacy of the 3-D model used and developed in Ruggedised. The 3-D model is a visualization of previously only 2-D visualized information, such as maps and sensor data. The 3-D model spoken about in this report is an extension of an existing model (Rotterdam 3-D, which anyone can visit at https://3drotterdam.nl/#/) combined with a new operations platform. This operations platform combines datasets from multiple sources, government and privately owned.
This report describes the privacy questions, answers and risks regarding the 3-D model developed within Ruggedised.

1.1 Content

This report is set up as following. First, in this chapter the framework of the report will be discussed. Furthermore, the definition of privacy used in this report will be described.
Secondly, there will be a description of the needs to guarantee proper privacy security. Followed by this, an overview of ways Ruggedised currently completes these needs and gaps.
Thirdly, the method for gathering the new information, which will fill the current gaps, will be described.
Finally, there is a description of future questions and hypotheses that should remain under our attention when developing and expanding the 3-D model. Even though these questions might not be applicable to the current situation, it is important to keep the development of the model in mind and already be aware of potential privacy risks in the future.

1.2 Framework

This report describes the privacy questions regarding the 3-D model used in Ruggedised. It will provide the existing answers and the necessary investigations to be done to answer these questions properly. Which means that this report doesn't aim to describe a finished process but will be used as a description of the current situation and a first step towards guaranteeing proper privacy security with use of the 3-D model for Ruggedised.
Because this privacy question is new and accurate knowledge is not yet fully developed within the team, is it also possible there are more risks than can be overseen at this moment. That must be considered always when planning and discussing the privacy questions.

1.3 Privacy

Privacy is the ability for an individual to control the distribution of their personal information. Privacy always talks about information that is specific for an individual. If information is not linkable to an individual there is no question concerning privacy. The level of detail by which data is processed is hereby from uttermost importance. Thus, the detail by which data is collected etc. has to be specifically described as well. More about this in chapter 2.

2. Privacy Regulations

2.1 Introduction

This chapter will describe the current knowledge about privacy regulations concerning the 3-D model. The current knowledge is not complete and is constantly being deepened further. This report thus is only a snapshot of the process and a description of possible steps to be taken and discussions to be had. The questions introduced in 2.2 are based on internal regulations set by the municipality. Furthermore, the external parties are responsible for the legal processing of data they put into the model. They have their own privacy regulations that need to be added to the assessment to be aware of all data transactions and potential privacy violations within the 3-D model.

2.2 Regulations

2.2.1 Questions

To know if the 3-D model meets the current privacy regulations the following questions need to be answered about every data as specifically and detailed as possible:
-What is the data source?
-What specific data is collected?
-Who owns this data?
-What are the agreements with the data owner and the operations platform to process the data?
-With what purpose is this data collected?
-How is this data collected?
-Where is the data collected?
-How is the data processed/used?
-Who is responsible for the legal assessment of the processing of the data for this specific purpose?
- How long will data be held for and how will it be securely disposed of?

To do this is basically a Privacy Impact Assessment. More about the responsibilities of these assessments on chapter 3. This chapter focusses on how far we are with the currently gathered knowledge.

2.2.2 A fictional example

As an example, next a complete account of answered questions is described. This example is taken to show what kind of information is needed before a privacy officer can determine if the data follows privacy regulations.

Data Source: The private charging poles.
Specific data: The data collected is 1) live usages times (when is the pole used and when is it free), 2) usage percentage (how much percentage is the pole used and how much percentage is it not used) and 3) usage times by individual vehicles.
Collector: The owner of the charging pole.
Owner: The owner of the charging pole.
Agreements: Owner agreed to the data being used on an external platform with the municipality. But only when not showing the name/identity of the car-owner and the specific vehicles using the pole.
Purposes: 1) The usage times are collected to show in the Digital City when a pole is free, so people owning an electric car can find a charging spot easily. 2) The usage percentage is collected to tell the municipality if there should be a public charging pole placed in the vicinity to unload the burden on a specific pole. 3) The usage data by specific vehicles is used to know if private poles are used by one owner or multiple and if there is a necessity for placing a public charging pole, so the private owner isn't paying for the charging of any peoples' electric vehicle.

Collection method: The data is collected through a camera that recognizes licence plates and recorded and saves times of usage per license plate.
Where: At any privately-owned charging pole.
Processing procedure: This data is collected in a database owned by the owner of the charging pole and after encrypting the license plate information sent to the data hub. All data is saved in the hub and only the live usage time is visualized in the viewer. The rest of the (encrypted) data is accessible to only the municipality.
Responsible: The municipality makes an agreement with the owners of the pole and is thus responsible for following privacy (and other data management) legislations.

2.3 Data sources

2.3.1 Current overview of data usage by the 3-D model

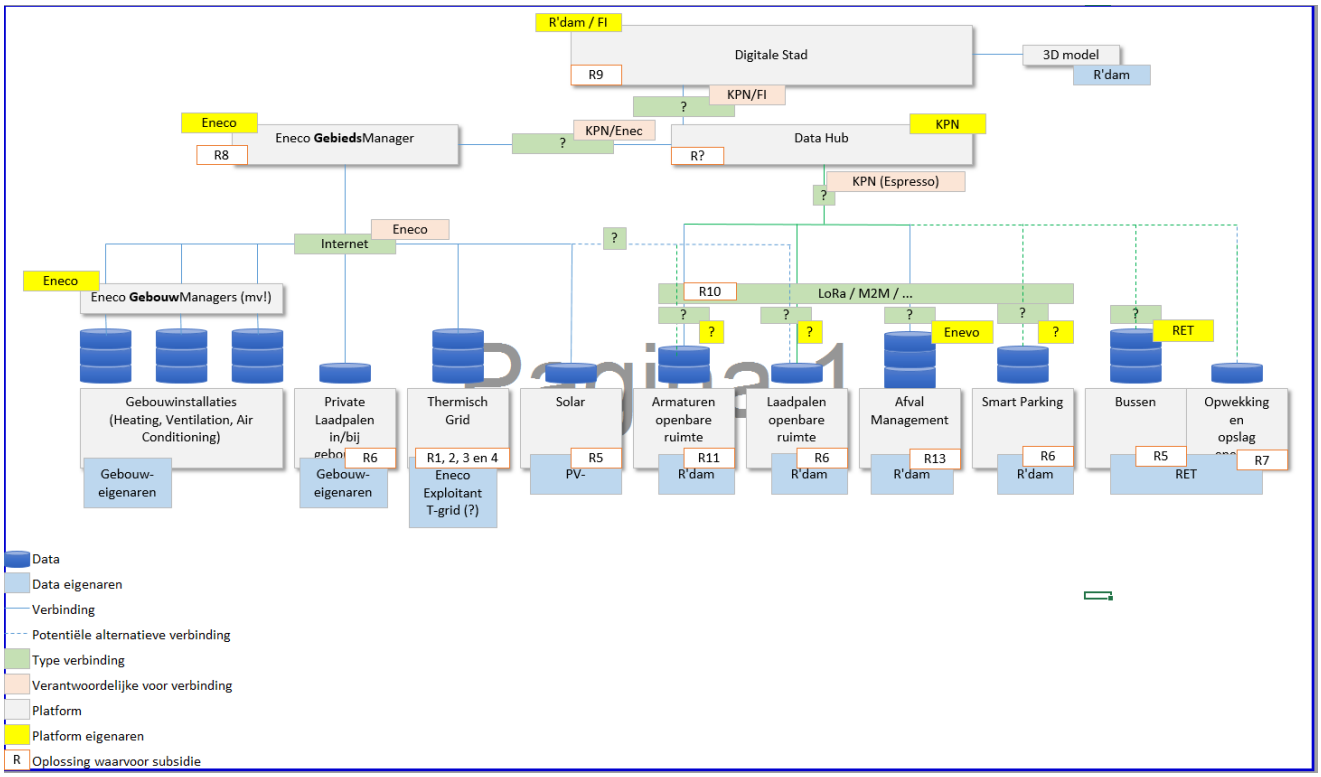

Figure 0-1 Current overview of data connections and sources

The figure above shows the current knowledge of data relations, sources and owners. This is a visualization of the current state of information. This overview, together with the project proposal, is analysed according to the questions mentioned in 2.2 to investigate if the current gathering of data meets the needs for guaranteeing privacy security. As seen in the questions defined in 2.2 there is an extensive amount of information necessary about the context of data processing and the processing itself. The answers to these questions will partly only rise when the model is nearly finished, and it is definite in what ways the data will be processes, used and collected.
For now, this is not definite, and the model is still fully in the development phase. Therefore, there is a lot of missing information before we can assess if the 3-D model violates any privacy regulations.
Still, it is of utter importance that we are aware of the currently missing information and structure a way to work towards gathering this information so when the model is ready for use we will be certain of privacy security.

2.3.2 Company internal regulations & data

Besides personal data, also company sensitive information is of importance. Company sensitive information doesn't directly have anything to do with personal data but contains sensitive information nevertheless. It is of importance that besides the correct use of privacy sensitive data we also keep in mind there is other sensitive data like company sensitive data. These types of data also must be managed correctly and there must be agreements about how to process these data, just like with the personal data. There are also companies who are linked to individuals where besides company sensitive information there is also the risk of privacy violation and thus a double risk.
The company sensitive information will not be considered in this method of assessing the current state of privacy regulations but is of importance for correct data management. Chapter 4 will discuss more about this.

2.3.3 Log data

Besides the above shown data sources and owners, there is also the creation of data within the operations platform. This data from now on shall be called 'log-data'. This log-data is created by all activity that happens on the operations platform. The log data is added in the table of data sources below but is distinctly named in this paragraph because it will need a different type of discussion to determine if it is violating privacy regulations. This is data that currently doesn't have a clear owner, doesn't have a clear purpose or a clear responsible party.

2.3.4 Method

The questions described in 2.2 are used in the following table. This table is filled with the current information gathered from data owners and sources. This is not complete and in 2.4 there will be a description of gaps in information to be taken to chapter 3 with the strategy for gathering the missing information and testing the privacy regulations for the 3-D model.

2.3.5 Table of sources

Source	Specific Data	Owner	Agreements	Purposes	Collecting	Processing	Responsible
Log data	Who uses what data when on the operations platform				Automatically collected within the operations platform		
Heating Installations	Heating usage over a specific period	Building owner	Eneco & Building owner	Monitoring energy usage to manage streams and make usage of RES	Smart meters + coupling management systems	Eneco Building managers	Eneco
Ventilation Installations	Ventilation usage over a specific period	Building owner	Eneco & Building owner	Monitoring energy usage to manage streams and make usage of RES	Smart meters + coupling management systems	Eneco Building managers	Eneco
Air Conditioning Installation	Air Conditioning usage over a specific period	Building owner	Eneco & Building owner	Monitoring energy usage to manage streams and make usage of RES	Smart meters + coupling management systems	Eneco Building managers	Eneco
Private charging poles		Owner of the pole		Create foreseen peak loads and stimulate better usage of RES		Eneco Building managers	
Thermal Grid		Eneco				Eneco Building managers	Eneco
Solar Panels	Energy produced; when and how much			To determine sizes of storage batteries or electric vehicles and analyse difference in periods of peaking demand and peaking supply	PV cells	Eneco Building managers	
Public Armatures	Failures of armatures	Municipality	To be Internally	Pro-active solving of failed lightning, and weather conditions		Data processed and visualized	Municipality

			owned & used			internally through AliS	
Public Armatures	Surrounding activities	Municipality	To be Internally owned & used	Changing lux-levels to activity		Data processed and visualized internally through AliS	Municipality
Public Armatures	Weather conditions	Municipality	To be Internally owned & used	Changing lux-levels to weather conditions and improve light quality & safety		Data processed and visualized internally through AliS	Municipality
Public Charging Poles		Municipality	To be Internally owned & used	Create foreseen peak loads and stimulate better usage of RES			Municipality
Garbage containers	Degree of filling	Municipality	To be Internally owned & used	A reduction of 20% of the # of km; a CO2 reduction of 280kg of CO2/day.	A sensor in the garbage container	Through the Lo-Ra network and monitored via an internal central portal	Municipality
Parking lots	Occupation	Municipality	To be Internally owned & externally used	Stimulate efficient use of parking area by knowing beforehand where parking lots are free or occupied	A sensor in parking lot		Municipality
Busses		RET		Monitoring need for the RET-fleet and balancing demand and supply of energy. Knowing when to use energy from the battery and when directly from the source.			RET
Storage and generation facilities for e-vehicles		RET		100% liability of ICT planning software in real-time. Monitoring the charging station usage so when not in use, private users can use it.			RET

3-D ROT Model	Basic registration Large-scale topography (BGT)	Municipality & provincial + national government	Free and unlimited usage by anyone legally defined	Provide citizens with visually understandable information; make further innovation possible	Directly gathered from the existing 3-D model		Municipality
3-D ROT Model	Basic registration addresses & buildings (BAG)	Municipality	Centrally available through National Provision BAG (Landelijke Voorziening BAG) for organisations with a public task	To give context with building information and street names to all other spatial information used in the viewer	Directly gathered from the existing 3-D model		Municipality
3-D ROT Model	Other						Municipality

*TCO = Total Cost of Ownership

Key to read the table:

Complete information	Missing information	No information

2.3.6 Gap analysis

After having made the complete overview of all current data sources it is important to make an analysis of the results.
Mainly the column including information about the processing of the data lacks content. This information is essential as it tells us for example who can view the data and if this is in line with the purpose. If not, this might be a privacy violation.
Also, most information about agreements made with data-owners is missing. For Eneco and RET there probably are agreements made, but these are missing in the description of Innovation actions where the purposes of these data-collections are described. For building owners and owners of charging poles these agreements must be made in the future for agreeing on cooperating with the system and accepting the Eneco Building Managers. For the municipally owned data that will be used externally an investigation should start into who should be agreeing to the sharing and potentially publishing of this data. This should be done with the owners of all different data sets used currently in the Rotterdam 3-D model.
Then there is also still a lot of unclarity about the specific data that is being collected. Data sources can collect a lot of different types of data, a public armature can have a camera, sound recorder and infrared sensor or can only collect data about the functionality of the armature itself. There is no concluding information written on a lot of the data sources and these uses should be framed more specifically to guarantee privacy security.
Other than this there are also potential other data sources that will be discussed in chapter 4: future questions and hypotheses.

3. Information gaps

3.1 Introduction

This chapter will describe how the current gaps in information will be filled and what risks or obstacles might be experienced along the way.

3.2 Responsibilities

3.2.1 Privacy Impact Assessment

A privacy impact assessment can be done to assess the privacy impact of the different processing methods of specific types of data. Every responsible party should do this for every single purpose that they have for specific data.
The DPIA's will highlight potential privacy-risks currently unseen and other privacy obstacles that might impede the 3-D model. In some cases, it is even obligatory to do such an assessment. All responsible parties should consult a privacy officer to investigate the necessity and potential obligation for all data processing methods they are responsible for.

3.2.2 External parties & sensitive information

Furthermore, there is also a potential to gather other sensitive data mentioned in 2.3.2. External parties that might be sharing sensitive data should fully describe this in their data management plan.
All external parties must take responsibility for being fully aware of specific forms of data collected and the precise ways these data are being processed. They must be ready to provide anyone with this information. The external parties must also gather all information about mentioned possibly deviant internal privacy regulations or internal deviant data management regulations. It is assumed that when anyone consults the external parties, they are fully aware of internal privacy regulations and processing methods of the data they process in relation with the 3-D model. This can be done through a DPIA or any other method the external party prefers.

3.2.3 After the PIA: reducing privacy risks because of ethics

The responsible parties are, besides making an assessment, also responsible for reducing the potential privacy risks. This could mean minimizing data collection or changing data processing methods internally or within the external parties. If this should be done is, besides falling into necessary legislation, also an ethical question. After having done a DPIA the conclusion can be that the processing method falls completely within the current privacy laws but still the data collection should be minimized for some other reason. These are ethical questions that can only be answered after having done a thorough assessment.

3.3 Phases

3.3.1 Phase I – M24 until M26

Organize a general privacy meeting including all responsible parties and privacy officers to discuss gaps of information in current data sourcing/methods/etc.
All responsible parties discuss with their preferred privacy experts for which processes it is necessary or beneficial to do a DPIA.

3.3.2 Phase II – M26 until M30

Write & Complete DPIA's.
Communicate conclusions of the assessments within the whole range of parties.
Organize another general meeting to discuss a list of necessary and potential modifications of the data processing methods and data sources.

3.3.3 Phase III – M26 until M36

Discus the potential modifications and set up deadlines for the necessary modifications with concerning parties.
Have the complete modified overview of data sources, data types, purposes, agreements, processing and collecting methods and concluded the correct usage of data within the data regulations.
Model ready for use.

3.3.4 Phase IV – M36 until end of project

From the moment the 3-D model is in use the 3-D model should be monitored and new data sources must follow the lines the current parties have taken. Unclear what lines that are as of now, but this should be defined in this phase.
Privacy officers consult KPON in assessing the privacy implications when adding new data sources, before allowing the data to be added to the model.
More about this phase and potential privacy risks can be found in Chapter 4.

3.3.5 Risks

Knowledge of privacy regulations is not in all cases the expertise of the data owner or individual making data agreements or deciding on how to process the data. Because of this, there can be extra work for the privacy officer to check all the information external and internal parties provide when the officer is not constantly present at meetings or during information gathering and assessing.
There should be made clear agreements on what the responsibilities are of the privacy officer of the municipality, the privacy officers of external parties or the individuals that are gathering the data and may not have knowledge of privacy regulations.
Because this privacy question is new and accurate knowledge is not yet fully developed within the team, is it also probable there are more risks than can be overseen at this moment. That must be considered always when planning and discussing the privacy questions.

4. Discussion & Recommendations

4.1 Discussion

4.1.1 Future data sources

Because the 3-D model is left to the market to explore, there might be future data sources that cannot be foreseen. This strengthens the importance of the DPIA's and to clearly define the beginning and ends of potential data uses after the discussions done in Phase I and II. Even hypothetical uses should be defined so these potential future sources are mapped beforehand, and agreements can be made based upon the DPIA's and information brought in by the privacy officers, from the municipality and externally as well.
There should be a structured process for adding new data sources and asses them to the privacy regulatory information found while making the DPIA's. Who can be responsible for this process still should be discussed.
As stated in 1.2 Framework, this report only considers the current state of the 3-D model and the overview of partners providing data as currently known. It is out of its scope to consider possible future applications added onto the 3-D model, but this should be taken into full consideration when writing the DPIA's.

4.1.2 Combining different data types

Even after precisely describing all data types there is still a danger of privacy violation that should be kept under attention at all times: the combination of data types resulting in new information. Even when two, or more, data types don't violate privacy regulations, combined they can still violate privacy regulations.
This risk has to be discussed and mapped, because adding new data means that not only the information about that data must be assessed but also the potential risks when combining those data with the existing data. It is also still unclear who will be responsible for this specific potential privacy violation.

4.1.3 Company sensitive information

Besides this report that focuses on privacy regulations for the 3-D model, there are more data related questions that should be assessed considering sensitive information and data management. Questions that came up while preparing this document focus specifically on company sensitive information that is owned by for example Eneco and cannot be shared unconditionally.
For this, another report should be written if not a meeting should be organised. The privacy officer and the Data security officer of the municipality and Eneco can assess which of these options is the best.

4.2 Recommendations

4.2.1 Necessary additions

Added to this research there should be the following elaborations:
-Specific types of data collected, described in such a specific way that it is also clear what type of data is not collected;
-Specific purposes per type of data;
-Specific processing processes of all the specific types of data;
-External privacy regulations (when can they share what types of data and when can't they);
-Agreements with external companies on sharing company sensitive information;
-Appointed responsible parties for specific data being processed.

4.2.2 General recommendations

For future recommendations it is of high importance that everybody involved with the 3-D model recognizes privacy security as of high importance. As more information is added to the model and private data is added, it is probable that this data will have more potential for privacy violation. In any case, new questions will arise and should be thoroughly researched from a privacy security viewpoint taking the PIA as a starting point. It is thinkable that these questions are not covered by existing legislation and thus in the future it would take extra time and energy to coherently provide privacy security for all users of the 3-D model.
This must be considered when expanding the use of the 3-D model.

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