

School of Computer Science

Data Management

in Fulfilment of

SPEC9997

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Degree: TU060/1

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**Date: 2021/03/24**

Data Management Plan &

Data Protection Impact Assessment



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This Project submitted in partial fulfilment of requirements of Technological University Dublin for the degree of

M.Sc. in Computer Science

May 2022

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# Introduction

This section outlines and summarizes the scenario for both the reader and the author of this project.

This project is based on a case study of a fictional high-tech company that aims to apply machine learning techniques to are outlined below:

1. Develop machine learning models to predict rehospitalisation and exacerbations of

health symptoms related to their heart condition.

2. Compare actual patient outcomes with their predicted scores to validate the machine

learning models that they are based on.

3. Integrate machine learning models into a remote monitoring system and present risk

scores for each patient to nurses to enable them to make decisions on clinical care

and lifestyle interventions.

remote triage by monitoring patients using sensing devices and activity trackers,

gathering blood pressure monitors and digital weighing scales.

For each patient, HomeHeart nurses in the hospital can access a dashboard where they can

view each piece of sensor data captured from Medic commercial sensing devices by day,

week or month.

Any additional triage interventions will also be recorded for the study.

The HomeHeart team will give researchers access to the Digicare system that aggregates

live sensor data for each patient. table 3

They will also share 12 months of relevant past

medical history for each patient and demographic information for each patient.

Patients who are taking part in the study are between the ages of 65 and 97 (Average age:

73 years, Standard Deviation: 5 years); 623 Males; 377 Females. For every patient

demographic information such as age, gender, heart condition (table 1), comorbidities (other

health conditions) and any reported disabilities (see table 2) has also been collected.

significant ratio diff in male to female

Blind 2 -- this will be fun

Intellectual Disability 3 -- big no no

Mild cognitive impairment (MCI) -- also bad

You are an employee at the HomeHeart Clinic

Data Protection Impact Assessment

Identify actors in scenario

Patients - data stakeholders

HomeHeart - remote care for patients with heart conditions, nurses, consultants, researchers and admin staff

Digicare - cloud based data storage, servers in ie, de and us

MLHealth - research group

Medic - sensor manufacturer - they handle data from device, stored in cloud based in france

LO

1 Demonstrate cognisance of the roles and responsibilities of data

management stakeholders and be able to critically evaluate their

significance in relation to relevant EU and International legislation.

3 Identify the role data quality plays, discuss deficits and limitations

and explain appropriate remedies

4 Contribute to key ethical debates in data science and machine

learning (i.e. data quality, bias in data, informed consent and

privacy issues)

5 Design and implement data balancing and fairness strategies to

overcome bias in data

6 Critically analyse different GDPR functions and responsibilities for

organisations of various sizes

7 Critically analyse the impact of data privacy needs on

organisations and individuals

8 Design and implement anonymisation strategies and examine

related issues

9 Design a data management plan for a complex multistakeholder

prediction tool in the field of digital health.

10 Conduct a Data Protection Impact Assessment (DPIA)

# Data Management Plan

Data Management Plan Template

A data management plan (DMP) is a formal document that describes the data you expect to

acquire or generate during the course of a project, and how you will manage, maintain and

protect your data. The following template is a modified and truncated version of a DMP.

1. With the aid of a diagram, outline the flow of data that will need to be managed and

shared for this project including data types and the stakeholders or individuals that

are responsible

[15 marks]

2. What data quality issues have you identified and how will you remedy them?

[10 marks]

3. Is there any potential for data bias in this project and if so, what strategies will you

use to address this?

[15 marks]

4. What measures will you take to ensure and maintain data privacy and security for

individuals?

[10 marks]

## Document Outline

# Data Protection Impact Assessment

Data Protection Impact Assessment Template

Data Protection Impact Assessments can be used to identify and mitigate against any data

protection related risks arising from a new project, which may affect your organisation or the

individuals it engages with.

DPIAs are important tools for negating risk, and for demonstrating compliance with the

GDPR. The following template is a modified and truncated version of a DPIA. These

questions should be answered based on the GDPR and related 2018 Irish Data Protection

Act.

1. If you are processing personal data, what is the lawful basis for processing this

data?

[5 marks]

2. If the project involves multiple organisations, identify the data controller(s) and

processor(s)? (Justify your answer)

[10 marks]

3. How will you apply safeguards to ensure the processing remains lawful e.g.

Pseudonymisation, anonymisation?

[10 marks]

4. How will personal data be secured throughout its entire lifecycle?

[10 marks]

5. If relying on consent to process personal data, how will this be collected and what is

the impact if consent is withheld or withdrawn?

[5 marks]

6. What are the critical ethical risks for this project and how can you mitigate for them.

[10 marks]

# References

**There are no sources in the current document.**