

# Thesis on Open Sciene and data - Title WIP

Raoul Bruens

# Table of contents

<b>Abstract</b>	<b>3</b>
<b>1 Introduction</b>	<b>4</b>
<b>2 Open Science and Science for Policy</b>	<b>5</b>
2.1 Open Software/Hardware . . . . .	5
2.2 Trustworthy/explainable AI . . . . .	5
2.3 Woo/wob, Open Overheid . . . . .	5
2.3.1 Country comparison on E-gov standards and practices? . . . . .	5
2.4 Inclusive participation . . . . .	5
2.4.1 Scope (what cases and respective stakeholders does/can this apply to) / Stakeholder analysis (requirements) . . . . .	5
2.4.2 Citizen science and participation . . . . .	5
<b>3 Robust Incident Handling</b>	<b>6</b>
3.1 What is it / Context . . . . .	6
3.2 Example: Air Safety Investigation . . . . .	6
3.3 Example: Food and Drug Administration (w.r.t. restaurant hygiene inspections) . . . . .	6
3.4 Example: Software development principles . . . . .	6
<b>4 Steps within a Data Science process and their biases</b>	<b>7</b>
4.1 Data acquisition . . . . .	7
4.2 Data filtering and selection . . . . .	7
4.3 Algorithmic development/implementation . . . . .	7
4.4 Algorithmic application . . . . .	7
4.5 Results handling . . . . .	7
<b>5 Requirements (engineering)</b>	<b>8</b>
5.1 What have you learned from [policy/open science], [social safety] and [data processes] that we can translate into a set of requirements (for what)? . . . . .	8
5.2 What platform could facilitate the above-stated requirements? What would need to be made/adjusted/fine-tuned to be able to meet all/most requirements? . . . . .	8
<b>6 Application on existing processes</b>	<b>9</b>
6.1 TBD case . . . . .	9
<b>7 Proof of concept by example</b>	<b>10</b>
7.1 Own process with sample data, own stakeholder. Try to cover as many requirements as possible. WIP0 . . . . .	10

## 8 Results and conclusion

11

*Showing version from branch first-text*

# Abstract

Lorum ipsum.

# Chapter 1

## Introduction

With the ongoing advancements in AI and computer science, more and more applications will incorporate use cases of these technologies. It is not at all uncommon to see AI or other algorithmic solutions being used in business or society. For one, the results of a particular decision-making algorithm or computer model can be used to establish certain policies. However, in a social or political context, this is not always done in a standardized, constructive, or transparent way. This can sometimes lead to ignorance, misconduct or even abuse when it comes down to executing such a policy. Subsequently, if something goes wrong, finding out what went wrong and potentially rectifying the problem can be a costly endeavor. What's more, such breaches can result in a degree of culpability or persuasion of legal action.

This research document provides an overview of several relevant topics, areas and projects that illustrate or support the need for an open view of processes, with a focus on processes involving (public) data. It also highlights several principles that will support a [framework/set of requirements] for a process to mitigate the risk of bias, misconduct and ambiguity and to maximize stakeholder participation, process transparency, and traceability of decisions. In the end, this [framework/set of requirements] is validated through a presentation of a proof of concept that substantiates the intended purposes.

## Chapter 2

# Open Science and Science for Policy

### 2.1 Open Software/Hardware

### 2.2 Trustworthy/explainable AI

### 2.3 Woo/wob, Open Overheid

#### 2.3.1 Country comparison on E-gov standards and practices?

### 2.4 Inclusive participation

#### 2.4.1 Scope (what cases and respective stakeholders does/can this apply to) / Stakeholder analysis (requirements)

#### 2.4.2 Citizen science and participation

## Chapter 3

# Robust Incident Handling

3.1 What is it / Context

3.2 Example: Air Safety Investigation

3.3 Example: Food and Drug Administration (w.r.t. restaurant hygiene inspections)

3.4 Example: Software development principles

## Chapter 4

# Steps within a Data Science process and their biases

- 4.1 Data acquisition
- 4.2 Data filtering and selection
- 4.3 Algorithmic development/implementation
- 4.4 Algorithmic application
- 4.5 Results handling



## Chapter 5

# Requirements (engineering)

- 5.1 What have you learned from [policy/open science], [social safety] and [data processes] that we can translate into a set of requirements (for what)?
- 5.2 What platform could facilitate the above-stated requirements? What would need to be made/adjusted/fine-tuned to be able to meet all/most requirements?

## Chapter 6

# Application on existing processes

### 6.1 TBD case

## Chapter 7

# Proof of concept by example

- 7.1 Own process with sample data, own stakeholder. Try to cover as many requirements as possible. WIP0

## Chapter 8

# Results and conclusion