

Project Proposal

Pandemic Simulator

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Contents

1	Introduction	3
2	Initial Situation	4
3	General Conditions and Constraints	5
4	Project Objectives and System Concepts	6
5	Opportunities and Risks	7
6	Planning	8

1 Introduction

Our team decided to simulate a pandemic to help contain future panedemics more swiftly. During the current corona crisis it has become apparent that we need some way to predict the direction of a pandemic. In terms of feasebility we would first simulate a virus with just numbers and no graphical elements but later on we will incorporate a GUI if it is necessary. Since this is a purely scientific simulation done by students affordability and market and economic efficiency can not be determined. Since there isn't any funding involved in this project there are no risks only opportunities.

2 Initial Situation

The current corona crisis has shown us that an pandemic cannot be foreseen and needs to be dealt with as fast as possible in order to stop its spread. Currently measures like masks, shields or curfews cannot be tested unless they have shown some effect to stop the spread of a virus. Currently, there are many different simulations that try to predict the future of the corona crisis, and only the corona crisis. Those simulations are made to try to find out when the pandemic will finally end, so they do not offer the possibility to change the properties of the virus or to add new measures to test those. Also many of the simulations that do offer such settings are really hard to read and do not explain their graphs in enough detail.

3 General Conditions and Constraints

Our data needs to be obtained through trustworthy sources like government websites, universities etc. this includes data on the virus as well as how to simulate viruses. Also we currently lack the expertise to do such simulations which means we need to do some research first.

The only tool we can currently use are our own laptops which means the simulation can't be too complex so that it doesn't run on these devices.

4 Project Objectives and System Concepts

- Results shall be presented as clear and easy readable as possible.
- Infectionrate, Susceptible, Infected, casualties and recovered should be displayed on a graph.
- The calculations shall reflect a real virus with as much precision as possible.
- All initial data for the virus, event probability, etc must be displayed.

5 Opportunities and Risks

The project has the following opportunities:

- Pandemics can be shown simplyfied.
- Gain intel on an incoming pandemic.
- Government support because it helps them.
- Because of the high attention it shall be communicated very well at public events of the HTL Leonding

There are no risks because it is a purely scientific project without funding done by students.

6 Planning

List of major project milestones

- All knowledge has been acquired. Around the start of january.
- Running prototype with first results. Around the end of january.
- Output in the form of a graph. One week after a running prototype.
- Data acquisition from existing viruses. Around march.
- Scientific results for predicting outbreaks. Around May.
- Graphical user interface. Around june if there is some time left.

Our project will start after the required knowledge as been acquired which is estimated to be around january and will end with the with the start of summer break. First prototype should be available around the end of january. Implementation will start after knowledge acquisition. The core engine of the simulation will be the biggest block of work to be done. We are positive that we can do all the work in the given time.