

**NORTHEASTERN UNIVERSITY**

**COLLEGE OF ENGINEERING**

**INFO 6205 – Program Structures and Algorithms**

**Document Control**

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# **Solution Overview**

This solution simulates the spread of SARS – COVID-2, the pathogen behind COVID-19 and provides a medium to study the growth and spread of virus among people.

## Summary

The main purpose of this solution is to provide an interface to study the growth of SARS – COVID -2 and the effect that various remedial measures like contact tracing, vaccination etc. have on its growth rate.

## Requirements

The table below lists the main functional and non-functional requirements towards the solution design.

|  |  |  |
| --- | --- | --- |
| Req No. | Reference Areas | Description |
| REQ001 | Functional | Covid growth data |
| REQ002 | Functional | R – Factor and K – Factor of growth |
| REQ003 | Functional | Remedial Actions |
| REQ004 | Functional | Java GUI to simulate growth |
| REQ005 | Functional | Unit Tests |
| REQ006 | Non – Functional | Report – Conclusions |
| REQ007 | Functional | Comparison with SARS outbreak |

Table 1: Requirements

## System Context

The below diagram shows the system context diagram for the designed solution.

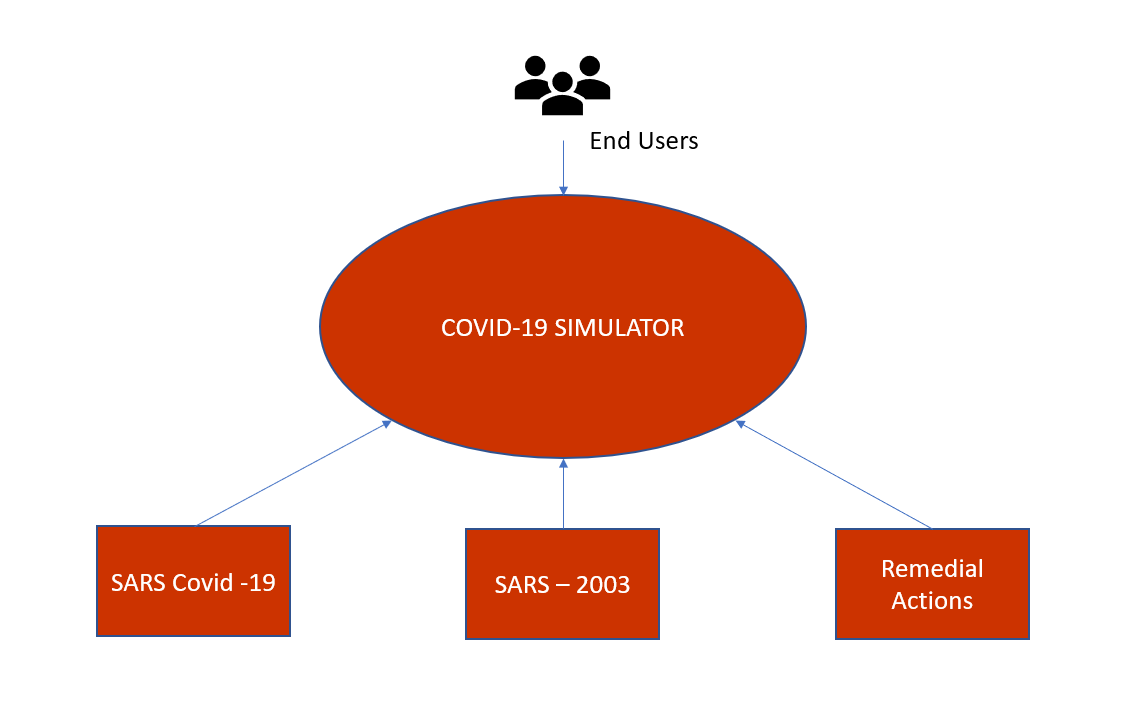


Figure 1: System Context

## Architecture Overview

The below diagram provides an architectural overview of the solution.

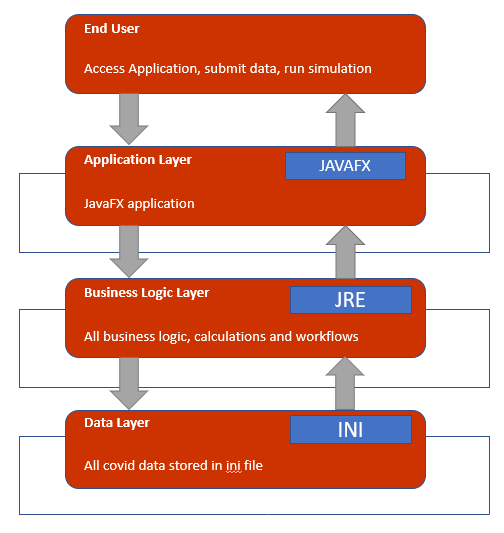


Figure 2: Architecture Overview

# **Infrastructure Design**

This chapter describes the infrastructure including hardware and software that the system must operate in and interact with.

## Infrastructure Constraints

There are no infrastructural constraints linked with the solution.

## Hosting Infrastructure

The application can run stand alone and does not require any separate hosting infrastructure.

## End User Devices

All end user devices are supported provided they have Java runtime environment and JavaFX installed on their system.

## Security and Privacy

No security constraints associated with the application as it does not interact with web and does not share any data over internet.

## Communication Rules

Not applicable as all the simulation data is stored within the application.

# **Application Design**

## Application Constraints and Deviations

Application requires a valid instance of JavaFX and JRE installed in user’s system to work.

## Integrations

Application does not integrate with any other system.

# **Bill of Materials**

## Licenses

No licensing involved as it is a custom-built system.

# **Appendix – A – References**

|  |  |
| --- | --- |
| **Titles** | **Description/Link** |
| Java installation | https://java.com/en/download/help/download\_options.html |
| JavaFX installation | https://openjfx.io/openjfx-docs/ |
|  |  |

# **Appendix – B – Glossary**

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| **Item** | **Definition** |
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