

# Technologies & Tools

## Versions:

Version ID	Date	Changes
1.0	30/08/2020	Detailing the technology stack that will be used throughout the project (TBC since requires approval by the other team)
1.1	2/11/2020	Added the desktop utility and IFC convertor library project information

## Development Environment

Since our allocated project is a continuation of a team from the previous semester, our team has decided to use the technology stack that the previous semester's team built the existing codebase with.

The existing project uses a micro-services architecture to arrange the web application as a set of loosely-coupled services, including a backend server, frontend client, and database.

In addition to prior modules, to meet the new requirements, we also introduced a new module, called IFC Convertor, which is a Desktop based utility. It is used to convert the IFC files into 3D models and upload them to the S3 Bucket and send the links to the backend. The utility is also responsible for converting the text files that had parameterized info into JSON format files.

The specific technologies used for each of these microservices / module are detailed below.

### Backend

- Flask RESTful API written in Python 3

### Database

- MySQL

### Frontend

- React.js
- JavaScript (ES6)
- HTML5/CSS3
- Ant Design of React
- Webpack

### Desktop Utility Project & IFC Covertor Library Project

- C#
- .Net Framework 4.7
- Visual Studio 2019
- MahApps.Metro
- Json.Net

### Deployment/Hosting

The application is deployed on an AWS EC2 instance, and uses a MySQL database hosted on AWS RDS. The hosting environment has been provided by the client.

- Docker
- Amazon Web Services
  1. S3 Bucket (for storing the 3D models generated by the IFC Convertor Utility)
  2. RDS for hosting the MySQL Database
  3. EC2 instance where the frontend and backend Docker containers are deployed

### Source/Version Control

- GitHub

### Testing

- Frontend Testing Framework: Jest + React Testing Library
- Backend Testing Framework: pytest
- Desktop Utility Testing Framework: MSTest

## **Kanban Board**

- Trello

## **Mockups/Protoypes**

- Figma

## **Communication**

- Slack