##### Requirements and quality expectations

After meeting with the client different requirements were discussed.

These requirements are the ones the interactive web-based visualization must have and are gonna define the scope of the project. All these are defined as functional requirements , as all these are functionalities that will necessarily be incorporated into the system as a part of the contract with the client.

| **Functional requirements** |
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| 3D world globe able to turn and zoom in or out |
| Choose a particular place so changes on that exact area can be spotted |
| Parameters that users will be able to change, such as, global warming temperature and date time. |
| Information about the sea level in on screen |
| Animations of the globe using time lapses, so geographical or sea level changes can be noticed during periods of time |
| Availability online (web-page) |

First, this visualization is going to be a 3D world globe, which the user will be able to turn and zoom in or out in any part of the map. This means that the resolution of the globe will need to increase as the user zooms into a specific area. For data to be shown in some places, interpolation between two points will need to be applied, whereas in most cases a linear progression can be precise enough, it won't always be the proper one to use. Moreover, the user will need to be able to choose a particular place so changes on that exact area can be spotted.

Secondly, the visualization will add different parameters that users will be able to change, such as, global warming temperature and date time. Apart from this, information about the sea level in that area will need to be shown while the user makes changes . Also, animations of the globe using time lapses will be aviable, so geographical or sea level changes can be noticed during periods of time.

Lastly, the application will need to be available online. This means that the python code will have to run on a web page and be accessible to any internet user. For this to be done a ubuntu linux based server will be provided to us by Napier university.

There are also a few requirements, which were not asked by the client, but we would like to add them to the system. These types of functionalities might not be added on the final version of the system.

| **Functional requirements (not client based)** |
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| Search bar so the user can put which exact place they would like to see |
| Population in that area will also be shown on the map |
| Users will have the chance of viewing the database used for the visualization |

A search bar so the user can put which exact place they would like to see without having to search for it on the map. Also, the population in that area will also be shown on the map, so users can realize how the sea level affects the citizens living in the area shown and where they would need to move to. Last, the users will also have the chance of viewing the database used for the visualization.

Apart from the functional requirements shown, there are also other non-functional requirements that the system will also need to follow.

| **Non-functional requirements** |  |
| --- | --- |
| Portability | Run on the main web environments that are used by the majority of users |
| Security | Database used for the visualization will need to be secured |
| Maintainability | Programme will have to be available the period of time that the server is going to be working |
| Reliability | If portability and maintainability are met, the system will also be reliable |
| Scalability | Programme will run even if new data is added to the database |
| Performance | Programme will need to run smoothly and avoid bugs or crushes |
| Design | Easy to use structured web design application |

Portability, the system will need to work in the main web environments that are used by the majority of users, such as Google Chrome, Firefox, Safari and Microsoft Edge.

Security, the database used for the visualization will need to be secured, which means that users won't be able to make changes unless they have permission for it.

Maintainability, the programme will have to be available during a long period of time, which will be determined by the period of time that the server is going to be working.

Reliability, if portability and maintainability are met, the system will also be reliable.

Scalability, the programme will need to be able to keep functioning even if new or different data is added to the database.

Performance, the programme will need to run smoothly and avoid bugs or crushes.

Lastly, the programme will also have a nice looking and easy to use structured web design, so the experience of the user while using it becomes the best one possible.

If all these non-functional requirements are met at the end of the project, the quality expectation will be complete.