# Skills and Resources

Team: 3200\_35, Sound Meter Data Visualisation.

The project will require our group to draw upon prior skills we have acquired in web development and data analysis. We are also required to expand our knowledge and skill base to meet and fulfil our client’s needs and requirements. We have constructed a skills audit to further understand our team’s competencies and what areas will require attention and developing proficiency. The skills are broken into four distinct categories: front-end, back-end, testing, and general skills.

**Skills**

**Front-end skills**

* HTML and CSS are required for structuring and styling the web page(s), which we will use to display our visualisations and analytics.
  + All group members have an adequate level of proficiency, having completed Agile Web Development last semester.
* JavaScript and React will display an array of visualisations in an interactive dashboard for user decision making and analysis. For example, D3 – Data-Driven Documents library has been identified as a potential library of use.
  + Collectively we have sufficient experience in JavaScript; however, we have minimal experience using React. We will undertake additional learning and online tutorials to acquire the necessary competency to complete the project.
* NodeJS is used to communicate with the API to collect the required data and perform pre-computation before passing it to the front end.
  + No group members have had prior experience using NodeJS, and this is a skill that requires developing across the board. We will undertake additional learning and online tutorials to acquire the necessary competency to complete the project.

**Back-end skills include**

* SQLite will be used as the database engine to store sound levels, ‘room’ profiles along with the officer’s location and exposures to dangerous decibel levels
  + We have the necessary skills to successfully implement a database that can adequately store and serve the data.
* Flask will be utilised to communicate with the database and pass the requested information to the API.
  + Our group has the adequate experience and skills required to implement a system capable of achieving the desired outcome.
* An API or WebSocket will be used for communication between the front end and the database
  + Our team has had limited experience deploying an API and will need to undertake additional learning via online sources.

**Testing**

* Testing will be required to ensure that our application performs as desired, which is vital as we will have five team members working on the project simultaneously. The information our application provides will aid in monitoring an officer’s wellbeing whilst onboard a navy ship. Testing will take form in various ways, such as testing the integrity of the database, testing the staged data before displaying it to the end-user, and testing the different features we incorporate.
  + Our team has had experience writing test cases from prior units; however, we require minimal additional resources to write test cases of this scale.

**General skills include**

* Collecting sound readings from various environments, including operating a sound monitoring device and storing the data collected.
  + Although a relatively straightforward task, some thought will have to be given to how we sample the data from chosen locations to simulate the environment onboard a navy ship. Research is required to understand the different sound profiles of the various rooms on board a vessel and finding an accessible location to simulate that environment.
* Interpret, comprehend, and understand the data collected to draw meaningful conclusions and display the information in a way health officers can make informed decisions. We will require an understanding of the relationship between sound levels and fatigue.
  + Since this is an area that all team members had no prior understanding of before our first meeting. We have researched this field and will continue to do so as required to ensure our methodology is effective.
* Project management skills, including utilising the Agile method keeping our project on track.
  + We have all had some experience managing a project; however, this is their first time driving a project of scale for some.
* Communication skills are essential across all aspects of the project, from organising intergroup tasks and meetings to communicating our problems and findings to our client.
  + Communication is a skill that requires time and experience to master and develop. The best way to improve is by simply doing it and asking for feedback, learning from experience, and asking yourself what was effective and what wasn’t.

**Resources**

Collectively, we have a strong base of knowledge in certain areas, allowing the group to build additional skills where required. We have identified a number of resources that will enable the group to develop the necessary skills, we have broken the variety of resources into sub-categories.

**Front end resources**

* React
  + Academind – online video tutorials
  + freeCodeCamp.org – online videos and articles
  + w3schools – online modules and tutorials
* NodeJS
  + Programming with Mosh – online video tutorials
  + freeCodeCamp.org – online videos and articles
  + Tutorialspoint – online modules and tutorials

**Back-end resources**

* API
  + freeCodeCamp.org – online videos and articles
  + REST API Tutorial – online modules and tutorials
  + API Metrics – online modules and tutorials
* Websockets
  + freeCodeCamp.org – online videos and articles
  + Tutorialspoint – online modules and tutorials

**General resources**

* Scholar articles and studies relating to sound impact on fatigue; from factors such as sound level, frequency and consistency.
  + For example, “Noise and Fatigue in Working Environments” – which conducted studies examining how noise can affect alert-fullness and fatigue in the workplace
* Mentorship from Matthew James, CTO of VGW.
* UWA and online material regarding agile methods, precisely the scrum method.
  + Wrike – steps and strategies for running a practical project with the Agile methodology

The task also requires access to both hardware and software tools;

* Software tools include:
  + JavaScript D3 library
  + JavaScript React library
  + Flask web app framework for Python
* Hardware includes:
  + Access to sufficient personal computing power to construct the system.
  + Access to a sound recording device.