

# Project Background (Inception)

## Client

**ARPANSA's Vision: "A safe radiation environment for the Australian community."**

The Australian Radiation Protection and Nuclear Safety Agency is the Australian Government's primary authority on radiation protection and nuclear safety.

The client has six main objectives. [3]

1. Identify, assess and communicate health, safety and environmental risks from radiation.
2. Promote radiological and nuclear safety and security, and emergency preparedness.
3. Promote the safe and effective use of ionising radiation in medicine.
4. Ensure risk informed and effective regulation.
5. Enhance engagement with stakeholders.
6. Enhance organisational innovation, capability and resilience.

The client aims to achieve these objectives in order protect people and environment from the harmful effects of radiation. [2]

The client consists of several departments, the *Primary Standards Dosimetry Laboratory (PSDL)* being our main client for this product.

## Client History

Our client, Australian Radiation Protection and Nuclear Safety Agency (ARPANSA), was established on 5th February 1999. ARPANSA is a regulatory agency under the national Commonwealth government of Australia that aims to protect Australian citizens from both ionising and non-ionising radiation. They work under the guidance of the Australian Radiation Protection and Nuclear Safety Act of 1998 as a national regulatory body of radiation in Australia [1]. Before its establishment, the authorising body was called Commonwealth X-Ray and Radium Laboratory(1935-1972), which was renewed as Commonwealth Radiation Laboratory(1972-1973), then Australian Radiation Laboratory(1973-1999).

At present, their responsibilities include[1]:

- Regulating the use of ionising radiation
- Setting national standards for radiation use
- Protecting citizens from radiation exposure
- Promoting the safe use of radiation in medicine
- Enforcing national radiation standards
- Providing advice to the Australian government and community about radiation or nuclear issues

## Project Description

### Context

*Primary Standards Dosimetry Laboratory (PSDL)* - a department in *Australian Radiation Protection and Nuclear Safety Agency (ARPANSA)*, calibrates radiation measuring instruments (chambers) and provides a report to the client with a certificate stating the results of the calibration. The PSDL provides us with user requirements and specifications for this project. The present workflow is based on Microsoft Excel spreadsheets, in which (1) the measurement results are recorded manually for analysis, then (2) the analysis results (e.g. calibration coefficient) are calculated and visualized by formula and graph, and finally (3) the report is generated via export Excel to PDF. However, this process is time-consuming nowadays, and with the increasing number of calibration services from various radiotherapy providers, the spreadsheets store and read data inefficiently and insecurely.

### Aim of Project

The goal of this project is to provide our client a solution that can replace the manual process of transferring data and the reply on Microsoft Excel spreadsheets, including storing the data centrally, performing the analysis and providing results such as graph automatically, and finally producing the report as desired PDF certificate and digital certificate.

## Vision Statement

The final product of this project would allow for less friction when the user processes raw MEX lab and client csv files. The product will also aid in the analysis and visualisation of the data. Certificates and PDF reports would be generated by the product as well.

## Business Case

### Problem statement and analysis

- Time consuming - the laboratorian manually transfers measurement data into Excel spreadsheet and as the data set increases, it requires more time (over 5 minutes now) to open the Excel file
- Software dependency - current workflow totally relies on Microsoft Excel software. If it is crashed, the data could be lost, which affects the whole process
- Security - the data is not protected and can be accessed by any person

## Expected benefits

- Improves efficiency - currently requires the user to upload raw MEX lab and client files and manually create PDF reports and certificates
- Increase convenience - users can view multiple sets of data from the one-page GUI instead of different sheets on Microsoft Excel
- Saves time - team currently has 4 team members and with the tool, the team can spend more time on other tasks rather than going through slow excel sheets
- Automated system - from retrieving data, analyzing to making a report, the overall process will be done by our product. Higher accuracy and reduced human effort are expected.
- High Performance - a new system will provide faster workflows compared to the current workflow - handling heavy/slow excel sheets.

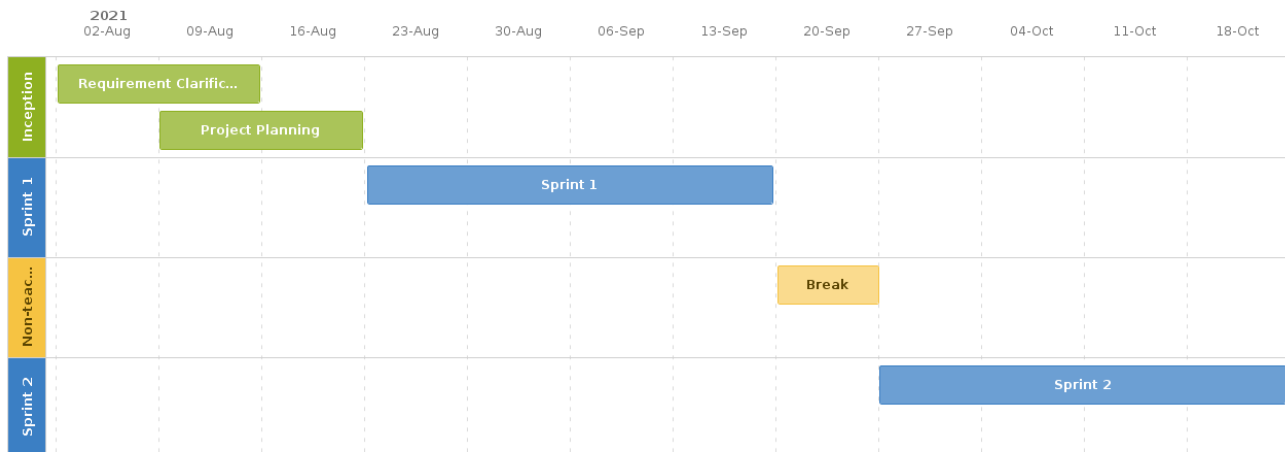
## Risks

ID	Type	Description	Probability	Impact (loss of working days)	Exposure	Justification
1	Project	COVID-19 causes member isolated.	10%	14	1.4	Since the lock-down in Melbourne and Victoria happens occasionally, the pandemic is not under control yet. Every team member is possible to be affected. But staying at home and working online keeps the probability low.
2	Business	The standard - ISO/IEC17025 by <i>National Association of Testing Authorities</i> (NATA) is updated.	10%	3	0.3	If NATA changes the measure standard, which will cause the calculation and analysis implemented to be changed accordingly.
3	Project	The project is not completed within the planned schedule.	10%	2	0.2	The project may not be finished by the due date. Extension is required and normally 2 working days are reasonable.
4	Project	None of three approaches meets the expectations of our client.	20%	5	1	Due to the limitation of laboratory, certain constraints may involve other departments and security team. If any conflict occurs, which causes the approach could not be accepted, more time to create new solution is required.

## Financial overview

- Cost of development - the project is conducted by COMP90082 students and all artifacts are presented as outcomes of the course
- Deployment cost - varies according to the approach proposed by different teams

## Timeline



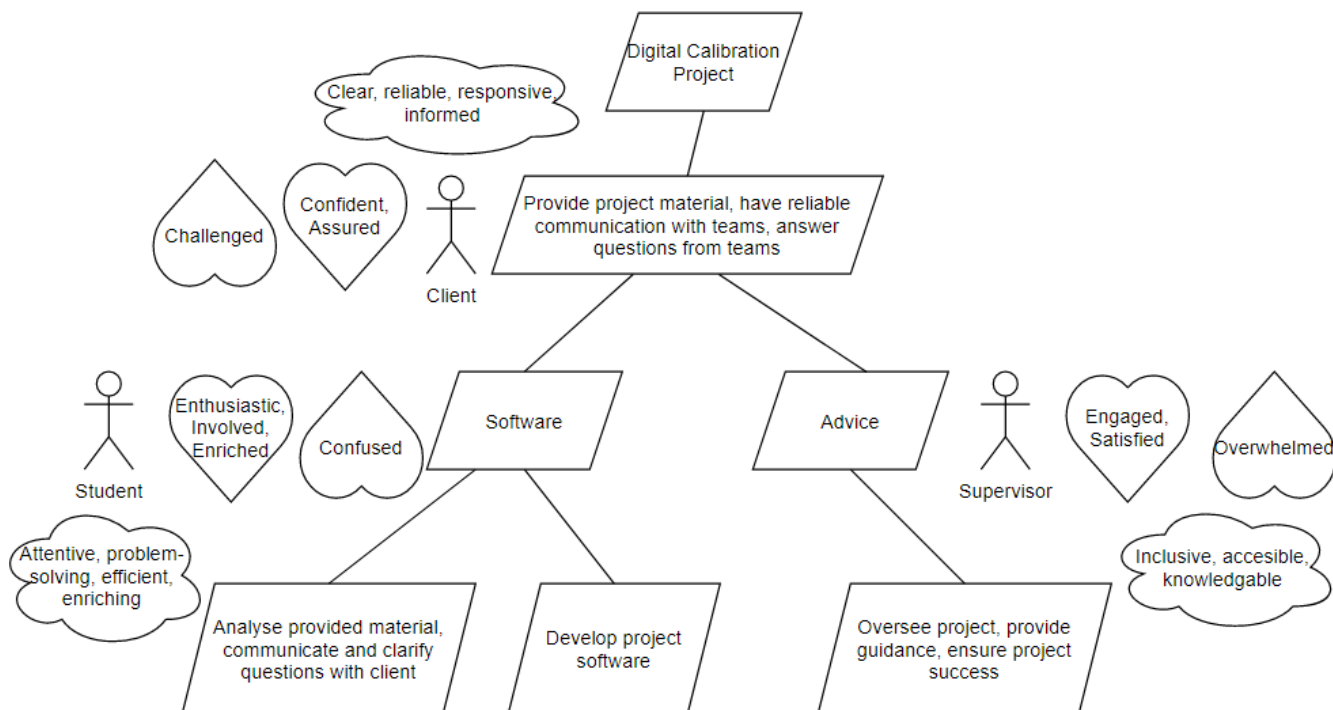
## Motivational Model

### Do/Be/Feel

Who	Do	Be	Feel
Client	Provide project material, have reliable communication with teams, answer questions from teams	Clear, reliable, responsive, informed	Confident, assured, challenged
Students	Analyse provided material, communicate and clarify questions with client, develop project software	Attentive, problem-solving, efficient, enriching,	Enthusiastic, involved, enriched, confused

Supervisor	Oversee project, provide guidance for students, ensure project success	Inclusive, accessible, knowledgeable	Engaged, satisfied, overwhelmed
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## Motivation Model Diagram



## References

- [1] Australian Radiation Protection and Nuclear Safety Agency (2021) Wikipedia. Available at: [https://en.wikipedia.org/wiki/Australian\\_Radiation\\_Protection\\_and\\_Nuclear\\_Safety\\_Agency](https://en.wikipedia.org/wiki/Australian_Radiation_Protection_and_Nuclear_Safety_Agency) (Accessed: 13 Aug 2021)
- [2] Australian Radiation Protection and Nuclear Safety Agency (2020). ARPANSA: *Who we are booklet*. [https://www.arpansa.gov.au/sites/default/files/arpansa\\_a4\\_fold\\_final\\_-\\_jun\\_2020\\_digital.pdf](https://www.arpansa.gov.au/sites/default/files/arpansa_a4_fold_final_-_jun_2020_digital.pdf) (Accessed: 15 Aug 2021)
- [3] Australian Radiation Protection and Nuclear Safety Agency (2019). *Corporate Plan*. [https://www.arpansa.gov.au/sites/default/files/corporate\\_plan\\_2019-2023.pdf](https://www.arpansa.gov.au/sites/default/files/corporate_plan_2019-2023.pdf) (Accessed: 15 Aug 2021)