

# CEED

## CEED Induction 2022

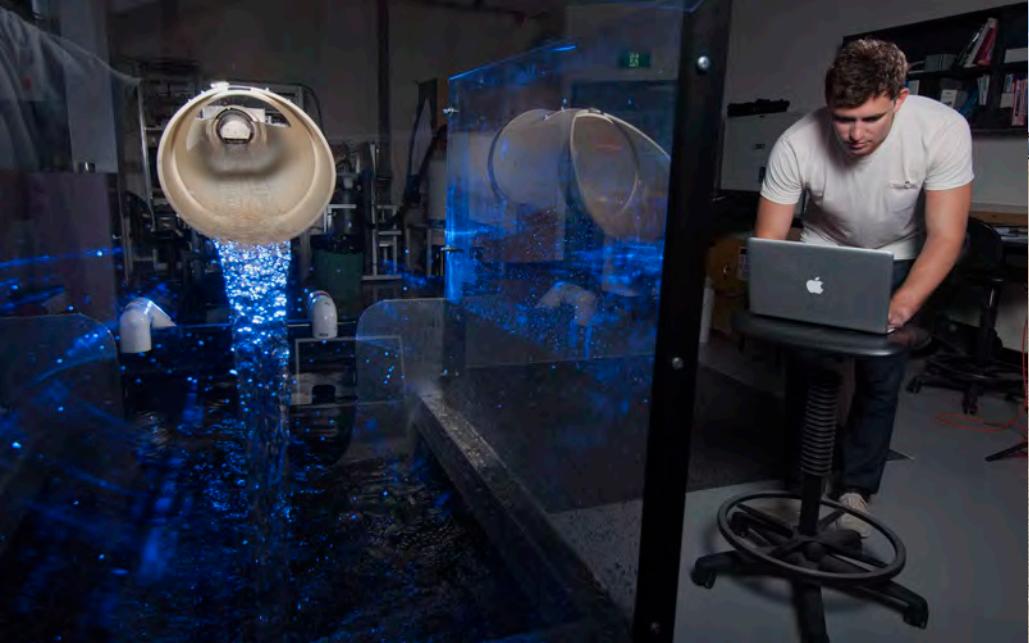
Jeremy Leggoe  
CEED Director

Amanda Bolt  
CEED Program Coordinator



# Welcome to the CEED Family





**CEED = Research projects dealing with real industry issues**



# Features of CEED Projects

- CEED projects have a defined commercial objective
  - CEED projects have defined deliverables, which are intended to create benefits for the Client enterprise
- CEED projects provide students with experience in operating in a professional environment
  - To make effective progress on the project you will need to develop a network in the client enterprise.
  - To gather and deliver information, you will need to become skilled in professional communication.
  - CEED project findings must be grounded in commercial reality
- CEED projects are supported by the client, the CEED Office and UWA
  - CEED clients support the projects with resources and expertise.
  - Academic supervisors contribute their expertise.
  - CEED Office staff provide an additional source of expertise.

# CEED Project Development

- The CEED office is in constant contact with industry to identify and develop opportunities.
  - Delivering presentations on-site
  - Developing relationships with HR organisations
  - Developing relationships with contacts
  - Maintaining relationships with our alumni
  - Maintaining a web and media presence
- Opportunities are referred to the CEED office by the Faculty, Office of Industry and Innovation Engagement, Development and Alumni Relations, and the Office of Research Enterprise.
- Academic staff develop projects with their own contacts, and we then facilitate the projects.
- Students develop relationships with industry, and engage us to facilitate the project.

**CEED WA**  
Industry Sponsored  
Research Projects

Information Pack 2019/2020



CEED student Matthew Avent studying the transport of sand in multiphase pipeline flows

Cooperative Education for Enterprise Development (CEED) is a formal program designed to link the academic and professional development of undergraduate and postgraduate students with the research and development needs of progressive organisations and the wider community.

What are CEED Projects?

CEED projects are student research projects undertaken for academic credit. Honours, Masters by Coursework and Engineering Final year Projects are most common, but Higher Degree by Research (PhD, Masters) projects may be arranged.

The project topics are defined by the client enterprise – meaning that CEED projects address real issues in the client's operations, delivering outcomes which enhance performance.

In "full" CEED projects, the CEED Scholar spends 8 weeks on site with the client during the summer vacation, immersing themselves in the operations and culture of the client while working on their research project.

Each CEED Scholar has both an academic supervisor and a mentor from the client enterprise. This ensures that the Scholar remains connected to the client throughout the project, and engages academic staff from our leading universities with the client and the project.

Benefits of CEED projects to client enterprises include:

- Cost effective research projects (eligible for R&D tax incentives) targeting issues specific to your business
- Engagement of leading university experts with your staff and issues
- Extended engagement with potential graduate recruits (including the potential to maintain relationships with vacation employees)
- Selection of a pool of potential graduate recruits in technology, policy areas, issues and operations unique to your business
- The opportunity to use the client mentor role in development programs for early career staff

There are two CEED intakes each year. The main intake in September-November, and a mid-year intake predominantly for engineering disciplines in April-June.

Past Projects

Each year, CEED Scholars present their work publicly at the CEED seminar. The seminar proceedings illustrate the nature and range of the projects undertaken by our Scholars and clients.

Past CEED seminar proceedings are available at: [www.ceed.wa.edu.au/about/seminar-proceedings/](http://www.ceed.wa.edu.au/about/seminar-proceedings/)

# Personal Capital in CEED Projects



- Staff members at the CEED Client have championed the project within their enterprise, which is expecting success.
- Your Academic Supervisors will be looking for opportunities for future interaction with the Client.
- The University's reputation as a world-class research institution rides on every external interaction.
- The ability of the CEED Program to secure future projects is dependent on the success of current projects.
- YOUR reputation in industry is dependent on your approach to the project – a CEED project is a chance to make a good name for yourself in the Client enterprise, which can pay dividends in unexpected ways in the future.

# Effective Communication

- **Rhetoric**
  - **The art of speaking or writing effectively**
- In Aristotle's classical view, rhetoric consists of three elements
  - Ethos – establishing the character or credibility of the speaker (ie – Does the speaker have the experience or background to make the argument?)
  - Logos – The logic of the discussion (ie – Does the Discussion make sense? Are the statements accurate?)
  - Pathos – The appeal to the emotions or sympathies of the audience (ie – Why would the audience get on board with a proposal? Why do they care?)



# Exercise - Communication

- 
- You have 60 seconds to describe your project to an audience made up of staff members from your client.
  - The 60 seconds will be timed – you will be cut-off at exactly 60 seconds.
  - You have 5 minutes to work individually to prepare your address.
  - You will not be allowed to use notes during your address
  - The group will provide feedback on how successfully you have addressed the elements of ethos, logos and pathos.

## **Session 2**

# **Project Initiation**



**Goal**



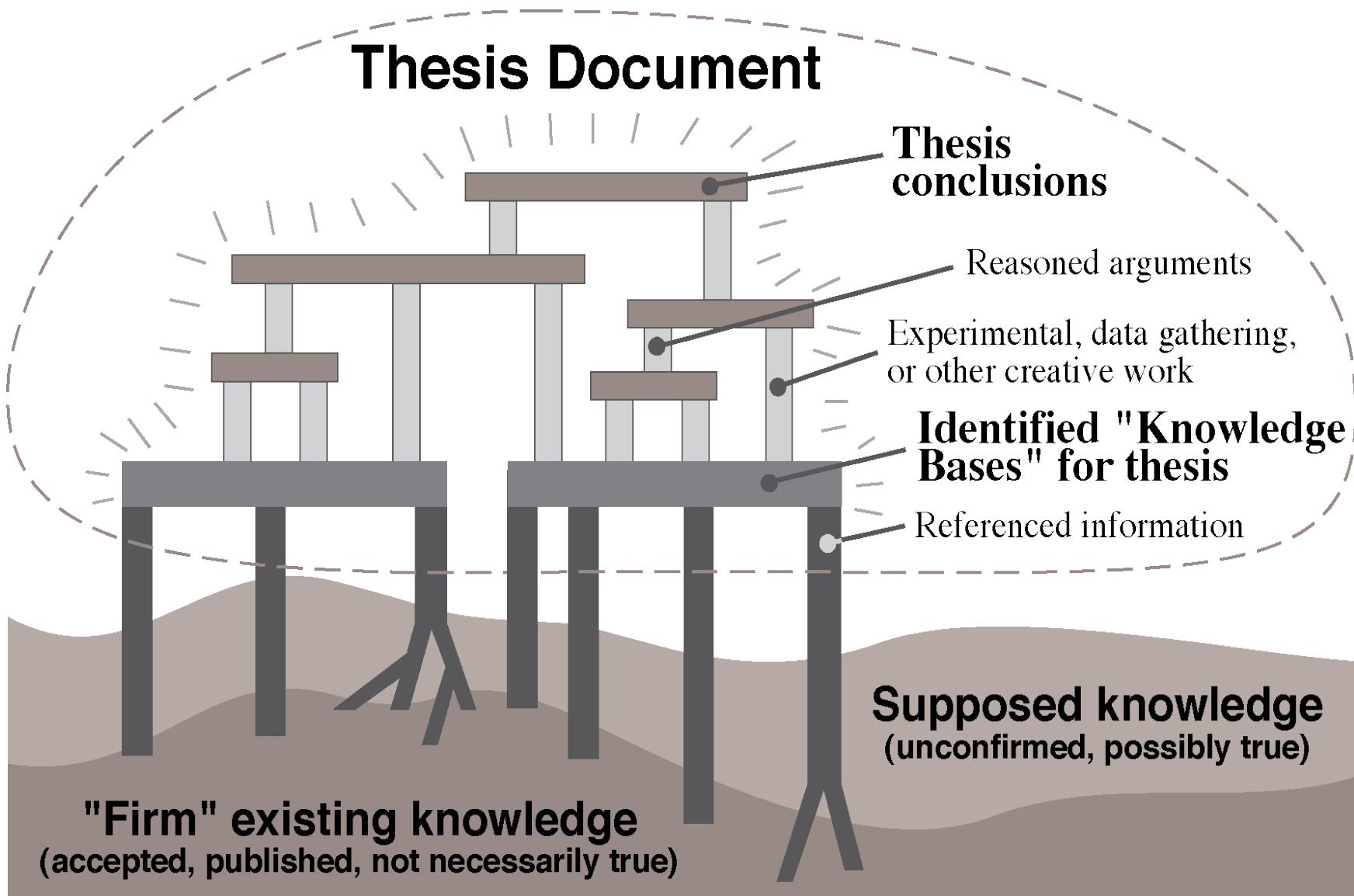
**You are Here**



# Getting Started on the Project

- Meet with your academic supervisor to discuss their ideas and expectations for the project.
- Start work on your literature review.
- Meet with your Client Mentor to discuss their ideas and expectations for the project
- Start compiling the Project Brief, and complete the first draft of the project brief within 8-10 weeks of starting work on the project

# Building a Foundation for the Project



Every statement and conclusion in a professional report must be supported by accepted literature or your results and deductions

# What is a Literature Review?

- The literature review is the first step in any successful research effort, and will continue throughout the project
- The purpose of the literature review is to establish the state of the art in the area that you are working in.
  - For investigative research, this will mean reviewing the academic literature.
  - For design projects, this will mean identifying current approaches to solving the problem of interest (or similar problems).
  - For industrial projects, this will entail reviewing standards and current operating practices.
  - In CEED projects, this will also require reviewing internal documents to determine the history of the issue within the client enterprise.

# Basic Tools

- Internet search engines have greatly simplified the process of identifying information sources.
- Google, Wikipedia and Media sites can and should be used to provide a quick overview of a field.
  - Use to identify relevant publications and experts.
  - Can help with basic definitions or even formulae.
- However, it must be remembered that it is generally **UNACCEPTABLE** to reference these sources in a thesis
  - The reviewing and control of posted data ranges from inconsistent to non-existent.
  - It can be difficult to assess the expertise (or motives) of the poster.

# Expert Materials

- A research report should rely on peer reviewed and/or edited materials such as
  - Scientific Journal Articles
  - Books
  - Scientific Conference Proceedings
- The UWA library is an excellent research library
  - In addition to the materials in the stacks, there is a wide range of journals available electronically
  - OneSearch is a very efficient tool, which can link you directly to books and papers
  - If a particular paper or book is not available, the library can generally locate a copy via inter-library loan relatively quickly. This service (**GETIT**) is free to students enrolled in final year, honours, and postgraduate projects

# Expert Search Tools

- Compendex, also formerly known as “Engineering Index” provides a list of papers matching your specified search terms.
  - To access
    - Type “Compendex” into the OneSearch text entry space
    - Click on the “view online” link that appears under the first search result in the list.
  - Compendex finds both journal papers and conference proceedings (Web of Knowledge focuses on journal papers)
- The “Web of Knowledge” provides a similar capability but can be more powerful because it also provides a Citation Index.
  - The number of citations tells you how influential a paper is.
  - You can follow a “citation trail” from an important paper to research the current state of knowledge in a field.
  - To access : Type “Web of Knowledge” into OneSearch, and the proceed as for Compendex.

# Web of Knowledge

<https://onesearch.library.uwa.edu.au/>

# Approach

- Remember that the word “review” is important – it is not a literature “survey”
- It is essential to read the material you find carefully and critically.
  - Does the material apply directly to your work?
  - What are the limitations of the published material?
- A good paper or book will usually be well referenced – the reference lists can help you find older, more fundamental work in a field
  - A good literature review will evolve and expand from each paper you review.
  - Fundamental papers can often make it easier to understand the topic you are researching

# Approach

- **IMPORTANTLY** - do not limit your consideration of literature to recent works.
  - Fundamental papers and texts can often make it easier to understand a particular technique or approach.
  - In seminal papers, the jargon of the field has usually not yet developed – so the text is often more comprehensible
  - The basis and limits of a particular approach can also often be more clearly identified in the original papers.

*So don't ignore the dusty old journals! In many fields, the basis of current thinking was laid out a long time ago.*

**“If I have seen farther than others, it is because I have stood on the shoulders of giants.”**

*Sir Isaac Newton*

# Exercise – Literature Review

- Identify bodies of literature relevant to your project.
- Identify search keywords relevant to those bodies of literature.
- Work in pairs (or a trio). Discuss your keywords, and bounce ideas off each other
- After 10 minutes discussion, we will go through a sample search for a few projects with the group.

# Initial Meeting With the Client

- The first meeting is an opportunity to set the tone for the partnership
  - Be prepared (technically)
  - Dress professionally (or appropriately, for site visits)
  - Coordinate with your supervisor before meeting the client (if possible)
  - Be prepared to network with client staff
  - Relax – remember, every one at the meeting wants the project (and therefore you) to succeed.



# Initial Meeting with the Client – Overview Questions

- What objectives is the Client seeking to achieve?
- What is the history of the issue/project within the Client enterprise?
- What benefits does the Client seek from achieving those benefits?
- What would the Client like as primary and secondary objectives?
  - Ensure Mentor understands the academic requirements of the project
- What deliverables is the Mentor expecting?
  - Report only, software, working prototype ?
- What is the preliminary timetable for project?
  - Do not agree to commercial deadlines

# Initial Meeting with the Client - Resources

- What constraints will be imposed on the approach to solving the problem
  - How will you need to fit in with other Client activities, products or policies?
- What resources does the Mentor think are needed? Does the Client already have them?
- What resources (e.g. labs and equipment) does the Mentor hope UWA will provide?
- Will any special test rigs be needed? Where will they be built or sourced?
- Will items be ordered specially?
  - Do you need to provide information? By when? Who will order the items?

# Initial Meeting with the Client – Client Factors

- Is any information needed urgently for budgeting?
- What mechanisms will be followed to approve expenditure?
- Which Client personnel have interest in the project and its benefits?
- Which Client personnel have relevant expertise?
- Agree on communication channels:
  - frequency of reports/meetings?
  - good days/times (or bad) to contact Mentor?
- Who will act as “deputy” Mentor when the Mentor is unavailable?

# Initial Meeting with the Client – Site Work

- When can you visit the site to familiarise yourself with the environment?
  - Are there any special requirements for site work (sites, medicals, safety training, special clothing)?
- Agree on the duration and timing of site work.
- Will there be any HR Department people involved?
- How best can you make contact with such people?

# Project Brief

**CEEDWA**

<Project Title>

Project Number 20|XXX

CEED Client Name

**Project Summary**

The project summary provides a clear, concise summary of the project. It should briefly identify the reasons for undertaking the project (with emphasis on relating those reasons to the needs of the client enterprise), the objectives of the project, and the business value realized by the client enterprise in achieving those objectives. It should then proceed to identify the methods by which the objectives will be achieved, and the total costs that may be expected (excluding the original project fee). The key deliverables must also be identified.

The length of the summary must be limited to ensure that the summary, the headings above, and the names below appear together on the cover page.

<CEED Student>  
<School>, University of Western Australia

<CEED Client Mentor(s)>  
<Facility>, <CEED Client Organisation>

<Academic Supervisor(s)>  
<School>, University of Western Australia

<Date>

Callum Webb Conveyer Belt Wear Life Modelling

**Endorsement**

**Student**

Print Name: Callum Webb

Date: 29/04/2013

**Client Mentor(s)**

Print Name(s): Stephen Muller, Rick C Wilson

Date: 10 May 2013, 14th May 2013

**Academic Supervisor(s)**

Print Name(s): R.Nazim Khan, M. Hodkiewicz

Date: 3 May 2013, 6 May 2013

**CEED Director**

Print Name: Jeremy Leggoe

Date: 16/5/13





**Objective?**

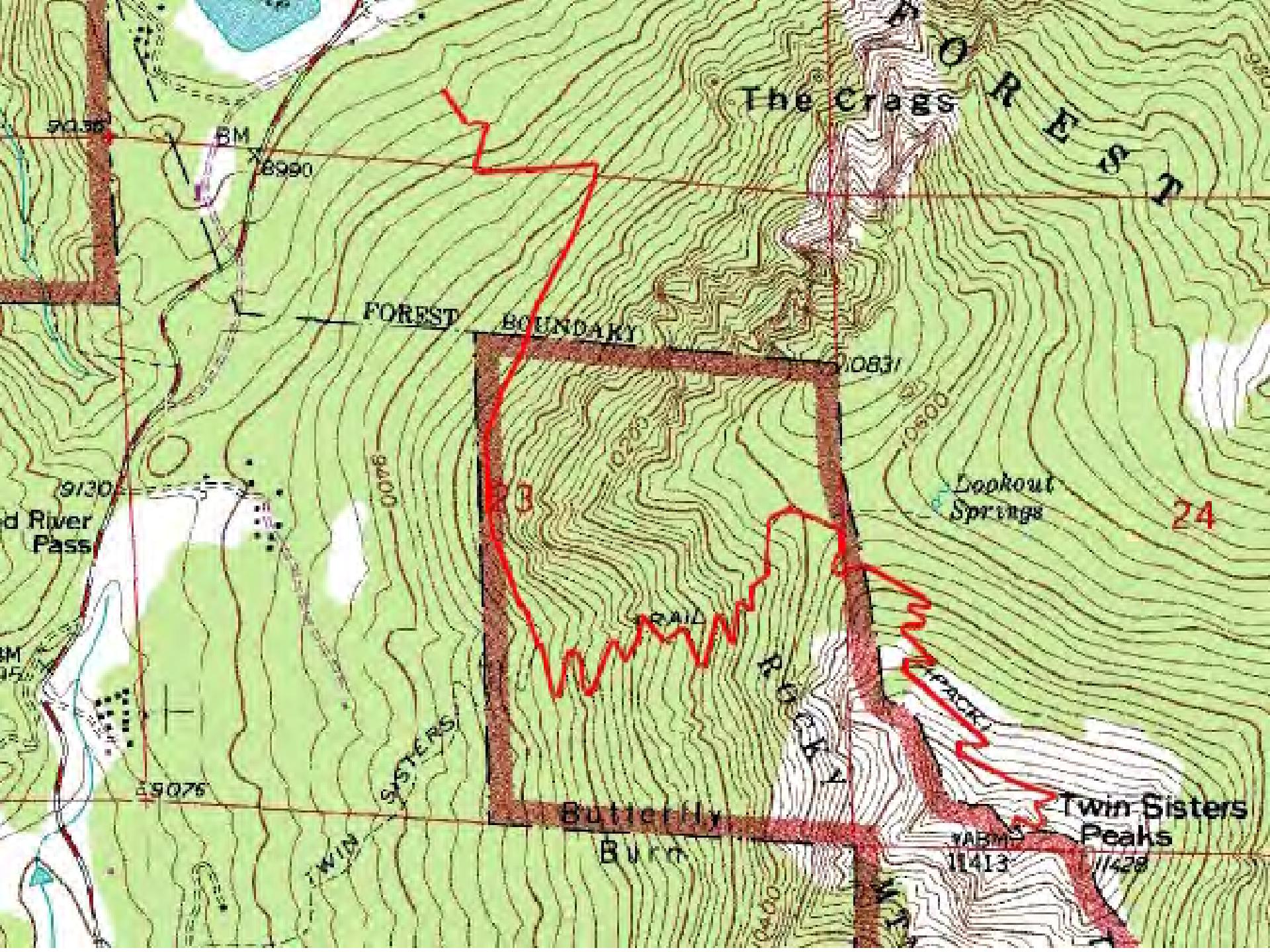
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?



**Path?**



# Project Brief Template

<http://www.ceed.uwa.edu.au/forms>

	<p>&lt;Project Title&gt;</p> <p>Project Number &lt; YY/XXX &gt;</p> <p>&lt; CEEDE Client &gt;</p> <p><b>Project Summary</b></p> <p>The project summary must provide a clear, concise summary of the project. It must briefly identify the what, why, how and intended outcomes of the project:</p> <ul style="list-style-type: none"><li>• What are the subject and objectives of the project?</li><li>• Why is the project important to the client?</li><li>• How are the objectives to be achieved (and what resources are required)?</li><li>• Intended Outcomes – what are the deliverables of the project?</li></ul> <p>The summary is a “shop window” for your project. Care must be taken in its preparation, as it is the first (and maybe only) part of the brief that will be read. As such, it provides an important first impression of the quality of your work. It should be a maximum of 250 words (this sample is 155 words), and must also be limited to ensure that the summary, the headings above, and the list of project participants below all appear in this cover page (without manipulating the fonts or formatting).</p> <p>&lt;CEED Student&gt; &lt;School&gt;, &lt;University&gt;</p> <p>&lt; Academic Supervisor(s)&gt; &lt;School(s)&gt;, &lt;University&gt;</p> <p>&lt; CEEDE Client Mentor(s)&gt; &lt;Department/Faculty&gt;, &lt;CEED Client&gt;</p> <p>&lt;Date&gt;</p>
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# Cover Page and Summary

- Project Summary
  - In some respects, the summary is the most important element of any proposal or report
  - For busy readers, the summary may be the only thing they read – it will ALWAYS be the first thing they read
- The summary must provide a clear, concise description of
  - The reasons for undertaking the project
  - The project objectives
  - The business value realised by achieving the objectives
  - The methods by which the objectives will be achieved and expected costs
  - The key deliverables

# Project Background

- 1st Element – Problem Statement
  - The specific issue addressed by the project
  - Implications of the issue for the client
- 2nd Element – Background Information
  - Current Situation
  - History of the issue in the client enterprise
  - State of the art (from early literature review)
- 3rd Element – Current and Future Environment
  - How does the environment affect the motivations and execution of the project
  - Changes that may affect the project – Will new equipment or information become available? Is legislation changing?

# Objectives & Benefits

- 1st Element – Objectives
  - What are the specific objectives to be achieved by the project?
- 2nd Element – Benefits Analysis
  - Describe the business value realised by the client through the implementation of the deliverables
    - Financial consequences
    - EH&S improvements
    - Improvements in KPIs
    - Policy formulation

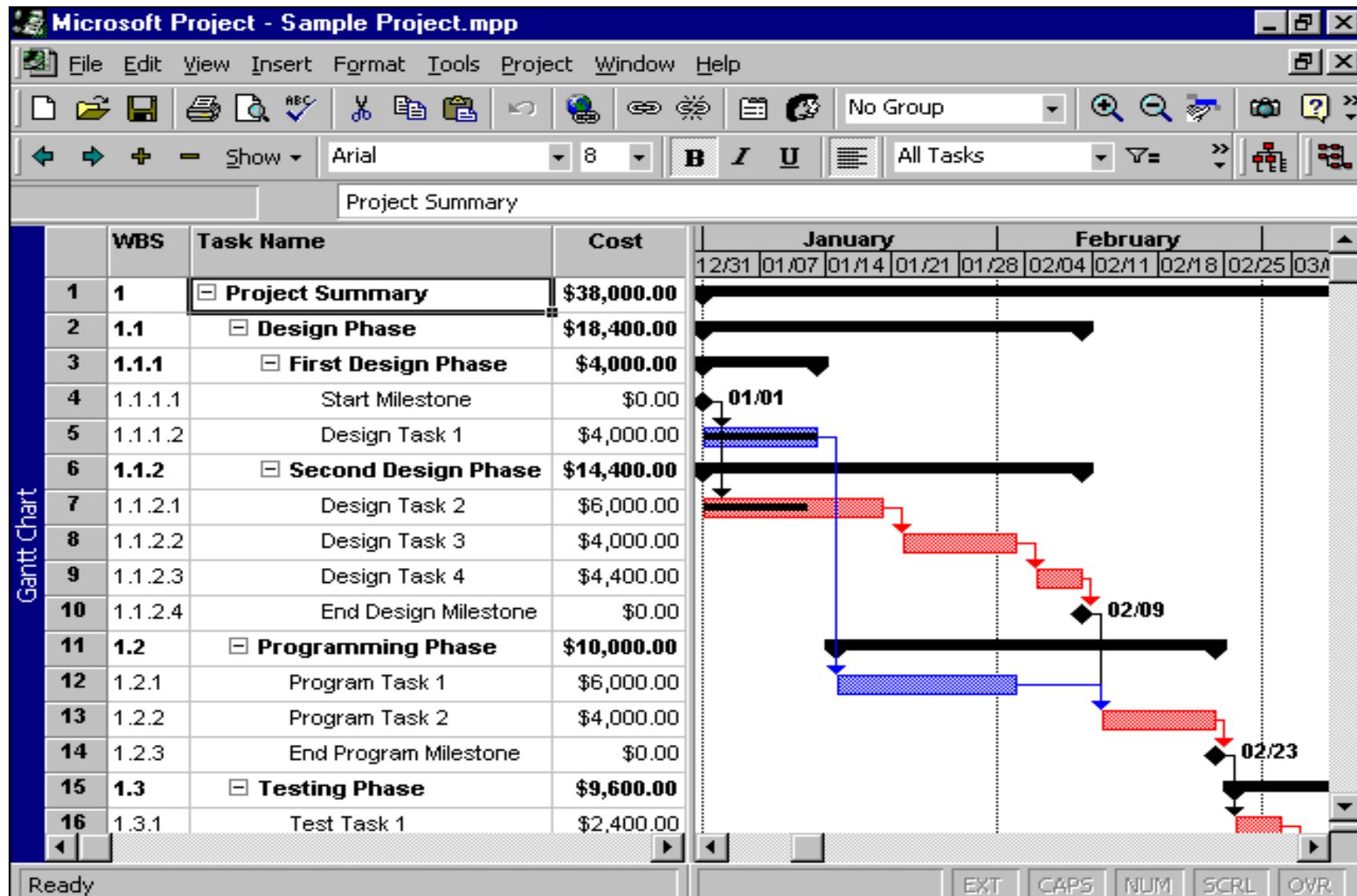
# Execution - Methodology

- The methodology sets out the process by which the objectives will be accomplished
- Break down the project into specific tasks, and describe the approach that will be taken to accomplishing each.
  - Experimental/Field tasks: describe equipment and techniques
  - Modelling tasks: identify software and computing resources
  - Theoretical tasks: identify approaches under consideration
  - Design tasks: identify tools or approaches
  - Financial tasks: describe tools and analytical techniques
  - Survey Tasks: describe approach and target populations
- Identify any constraints imposed on the methodology
- **This is often the weakest element in poor briefs**
  - **You should provide specific detail – vague ideas are not enough. Careful planning is critical**

# Execution - Timeline

- Scheduling the project elements is an essential part of research plan development
- The timeline should be described in two distinct ways:
  - A Gantt chart is required
  - The key milestones should be listed and discussed
- Consider the following key questions;
  - How long will each task take?
  - How variable is the predicted time for each task?
  - Which tasks can be done concurrently?
  - Which tasks have prerequisites?
  - Which tasks lie on the critical path?
- Discuss any key constraints on the proposed timeline

# Execution – Gantt Chart



# Exercise – Gantt Chart

- Prepare a Gantt chart for your project
  - Working individually, break down the project into tasks with identifiable outcomes and lengths.
  - Draw up your Gantt Chart on the west wall whiteboards
- The group will review and discuss the proposed timelines

# Execution - Resources

- You **MUST** identify any resources needed to undertake the proposed methodology
  - Who will provide each resource (UWA or the client)?
  - Check with your supervisor and mentor to ensure that resources are available
  - Are the resources in place? If not, how long will it take to secure them?
- Provide a detailed break down of any anticipated costs.
  - The client **must** agree in advance to any expenditure
  - Note any constraints imposed on expenditures (ie limit on total budget)

# Risk Management

- It's essential that project managers understand potential problems, or "risks", that may affect the project. They may then identify "risk management" strategies to eliminate or mitigate these risks.
- Risks are classified into four broad types:
  - Safety
  - Environmental
  - Financial
  - Project Outcomes
- Examples of each type of risk may be encountered in final year projects
- In your brief, you are required to provide a section addressing the various types of risk

# Risk Management (cont.)

- Safety Risks;
  - include those events that could potentially cause injury or death (both to participants and to bystanders)
  - Safety (and Environmental) risks should be documented in the project safety induction form, which MUST be included with the proposal
- Environmental Risks;
  - include those events that could cause damage to the environment (such as spills, waste, gas releases)
- Financial Risks;
  - Include blow-outs in the cost of activities or equipment, which may prevent project progress or hamper other operations
- Project Outcome Risks;
  - Include events that may adversely affect the successful completion of the project

# Risk Management (cont.)

- Risk management approaches could include;
  - Developing alternate approaches to cover equipment loss
  - Identifying strategies in the event that partner opts out
  - Identifying alternate techniques.
  - Developing strategies to ensure security of data.
- The brief **must** include a section on risk management. For each risk, you must provide;
  - A brief description of the risk
  - An assessment of the likelihood of the risk eventuating
  - The consequences of the risk
  - The management strategies to be adopted

# Risk Management (cont.)

- Note – It is imperative that your risk management section only include significant **real** risks
- If there is no significant risk of a particular type, it is perfectly acceptable to clearly and simply state that there is no significant risk
- **Do not invent risks just to pad out the risk management section.**
- Each project will encounter different risks – but it is expected that all projects will be subject to risks to project outcomes.

# Confidentiality & Publication Approval

- Is any of the information that you will be handling confidential (for IP, commercial, or publicity reasons)?
- What are the procedures for clearing papers, presentations and theses for publication/submission?
  - How many weeks in advance must they be submitted for approval? **Note – for most companies, the process will take 3-4 weeks. Mentors are often unfamiliar with this – so take our word for it!**
- Will this thesis need to be held confidential? If so, why, and for how long?

**It is essential that confidentiality requirements and clearance procedures be set out clearly in the project brief**

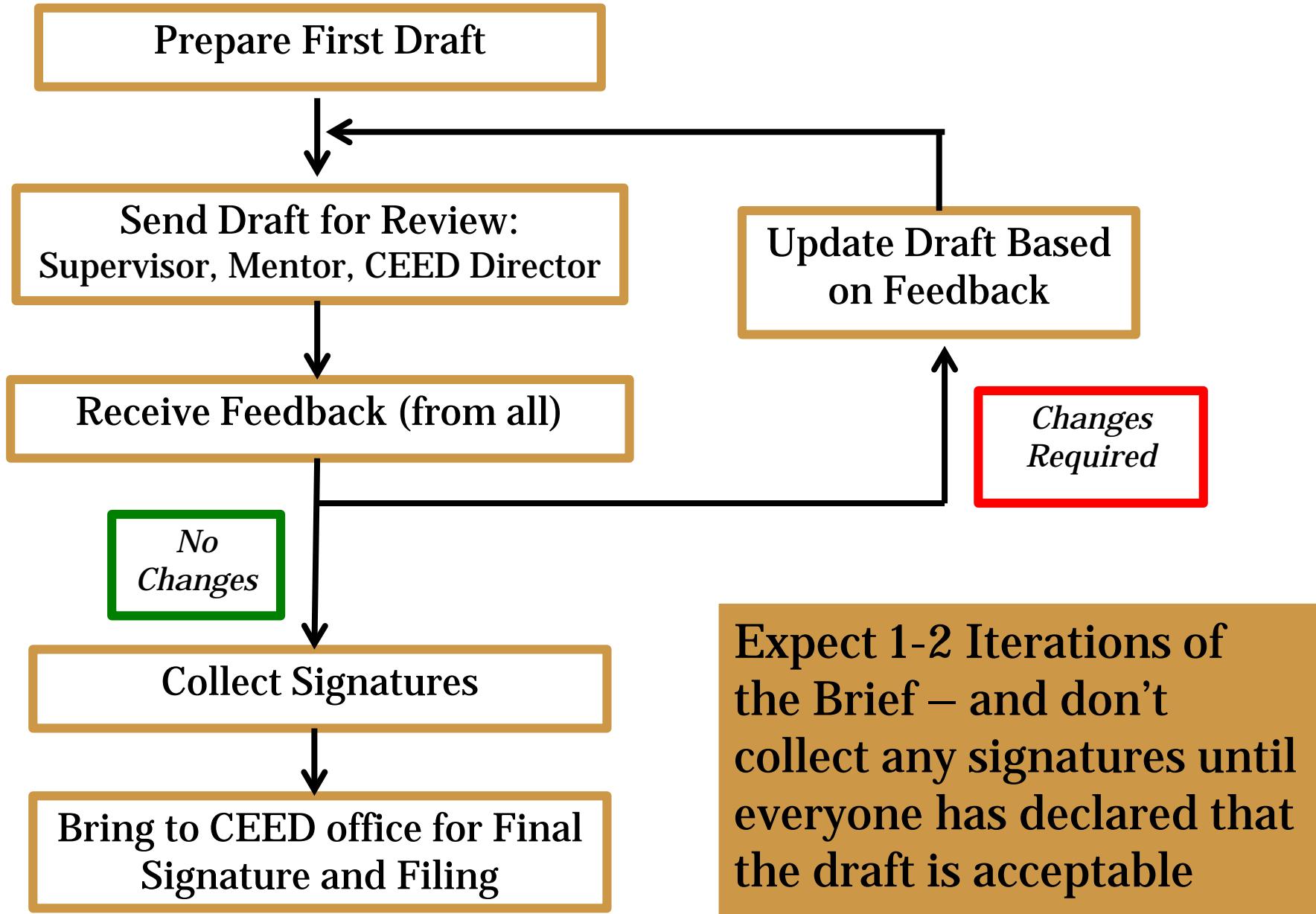
# Deliverables

- List all deliverables, specifying the format they are to be delivered in.
- Deliverables may include
  - Project Report
  - Software
  - Experimental Rigs
  - Manuals for Software and Experimental Rigs
  - Implementation plans
  - etc

# **Session 3**

# **CEED Project Coordination**

# Project Brief Preparation Process



# Project Brief Submission

- The first (and subsequent) drafts of the project brief must be submitted to the client, supervisor and CEED office for review
  - All parties must sign off on the final document, and so must be involved in all stages of the revisions.
- You can expect the brief to go through at least one set of revisions.
  - Ideally one should be enough – but it will depend on how well you follow the instructions for revisions.
- Pay particular attention to
  - Benefit Analysis
  - Methodology
  - Risk Management
  - Confidentiality
- **The project brief must be completed within 10-12 weeks of the start of work on the project**

# Monthly Report

Expenses This Month	
Urgent Issues	
<b>CEED Project Monthly Report</b>	Insert Month
<b>Project No &amp; Title:</b>	
<b>Client</b>	Insert Text
<b>Student</b>	Insert name
<b>Project progress this month</b>	
Enter Text	
<b>Issues affecting progress</b>	
Enter Text	
<b>Expected progress next month</b>	
Enter Text	
<b>Issues that may affect progress next month</b>	
Enter Text	

<b>Expenses incurred this month</b>				
\$				
<b>Total expenses incurred during the project to date</b>				
\$				
<b>Itemised list of expenses incurred this month</b>				
In this box, provide an itemized list of all project expenses incurred during the month, stating the amount of each item and the reason for the expense.				
Please also indicate whether it was an expense paid for by the client, or incurred by UWA.				
If expenses have occurred:				
<ul style="list-style-type: none"> <li>• attach copies of all receipts</li> <li>• attach a copy of the written <del>authorisation</del> from the client covering the expenditure.</li> </ul>				
If no expenses have been incurred this month, simply enter "No expense incurred this month" in this box.				
<b>Project Expense Table</b>				
Date	Expense Detail	UWA Amount	Client Amount	Approval and receipt attached Y/N
<b>Signed</b>		<b>Date</b>		

## Recipient List

- Academic Supervisor
  - Client Mentor
  - CEED Office ([ceed@uwa.edu.au](mailto:ceed@uwa.edu.au))
  - Self

# Monthly Report

- You are required to submit a monthly report by 5:00 pm on the first day of each month
- The template for the monthly report is available at the CEED website.
- The monthly report **must** be an accurate summary of the status of the project.
  - Your supervisor and mentor must have an accurate picture of project status, expenditures and resource needs in order to advise you properly and schedule resources
  - The submission of the report should serve as a reminder to update your project timelines
- The monthly report will be circulated to the client mentor, supervisor and CEED office.
  - It must be professionally prepared and presented

# Project Expenses

- The CEED Client entirely funds the project.
- You must comply with the accounting needs and procedures of the Client and the University.
- Written approval must be secured before incurring any expenditure; the client will be under no obligation to pay if you do not.
- You are responsible for the financial management of the project (under the oversight of your Supervisor and Mentor).  
**Expenses must be reported monthly.**
- Estimated Project budget requirements should be set out in the project brief, and discussed with the client during the formulation of the project brief.

Authorisation to Incur Project Expenses		
Project Number		
Project Title		
CEED Scholar		
Purpose of Expenditure		
Estimated Expenditure		
Quotation/ Estimate Source		
Attachments	[All Quotes/Estimates comprising the estimated expenditure must be attached and listed here]	
Authorisations		
Mentor	Signature	Date
Supervisor		
CEED Director		

# Project Expenditures

- **The client is responsible for all project expenses.**
- The client may incur expenditure directly (this is common for travel and accommodation), or we may incur expenditures on the client's behalf (this is common for workshop expenses, experimental consumables, test rig construction)
- **We can only incur expenditures on the client's behalf with the prior written authorisation of the client** – you must complete the expenditure authorisation form and have it signed by your mentor, supervisor, and the CEED Director before incurring expenditure
- In general, expenditures must be billed to your supervisors' operating accounts – **you should not incur expenditures yourself**
- The CEED office will bill the client and reimburse your supervisor at the end of the project – this will require you to provide:
  - Records of all internal expenditures (eg workshop hours)
  - Tax invoices for all purchases

# Minor Expense Allowance

- \$200 is included in the CEED project fee to cover printing expenses
- This amount is intended to cover the costs associated with preparing reports and deliverables for the client, supervisors and CEED Office
- Allowable expenses include:
  - Printing and binding of reports
  - Media for transporting digital files (thumb drives, external hard drives, etc)
  - Textbooks and photocopying
  - Other approved minor project expenses
- The allowed amount may only be exceeded with prior written authorisation by the client – they will be billed for the excess
- You may incur these expenses yourself – to be reimbursed, **you must provide all receipts – itemised tax invoices are the minimum requirement.**

# Studentship

- For full final-year/honours/masters projects the studentship is paid in three installments
  - 1<sup>st</sup> Installment: Upon receipt of a project brief signed by all parties
  - 2<sup>nd</sup> Installment: At the start of the second semester of your final year (if you are up to date with reporting requirements and making satisfactory progress
  - 3<sup>rd</sup> Installment: When Client confirms that all deliverables have been received and accepted.
- For Three Quarter final-year/honours/masters projects the studentship is paid in two installments
  - 1<sup>st</sup> Installment: Upon receipt of a project brief signed by all parties
  - 2<sup>nd</sup> Installment: When Client confirms that all deliverables have been received and accepted.
- **All payments are contingent on being up to date with monthly reports**

# Exercise – Monthly Report

- Prepare a sample monthly report for the first month of your project.
- You have 10 minutes to compile the report – later in the day you will get feedback on the reports.