COMP3850 Computing Industry Project

Read this document carefully and by the due date/time. All team members should be familiar with and refer to this Project Deliverables Definition Document. The team Quality Manager should ensure the team follow the instructions correctly.

As part of COMP3850 you will be formed into groups of 4-6 students. You will work together to understand what your client requires and go through a number of phases from assessing the feasibility, requirements, design, implementation and testing of a prototype or other artefact with associated documentation, as appropriate for your project. You can expect requirements and client needs to evolve over the period of the project.

The unit is divided into 3 project phases:

**Team Project Induction** – 25% (comprised of induction and team training; feasibility report and initial team manual (D1), project plan and scoping OR requirements document (D2))

**Team Project** – 50% (Updated project plan and scoping or requirements document, project documents and MVP (D3 & D4), final presentation/demonstration (D5))

**Individual Retrospective** – 25% (Individual written reflection (exam)(D6) and MVP handover and sponsor review (D7)).

At the two checkpoints identified in the deliverables schedule, each individual must fill in an online individual contribution form to state the percentage contribution of each team member, including themselves, to the deliverables included in that contribution form (see Deliverables Schedule). The final marks for Deliverables 1-4 may differ for each member of a group if a certain student does not contribute equally to the group’s deliverables according to the contributions submitted by team members.

The project will follow an agile life cycle and is made up of a number of deliverables that will be iteratively updated and expanded.

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# Summary of Group / Individual Activities and Expectations

## 1) List of Assessments and Deliverables

**INDUCTION – WEEKS 1-6 (25 MARKS)**

**Deliverable 1 (D1): Week 3**

Feasibility Study & Team Manual

**Deliverable 2 (D2) – Week 6:**

Updated D1 + Project Plan + requirements/scoping document

**PROJECT – WEEKS 7-13 (50 MARKS)**

**Deliverable 3 (D3) – Week 8:**

Updated D2 + project documentation + Prototype/MVP

**Deliverable 4 (D4) – Week 12:**

Updated D3 + user documentation + team retrospective.

**Deliverable 5 (D5) – Week 13:**

Project presentation and demonstrations

**PROJECT RETROSPECTIVE - WEEKS 14-16 (25 MARKS)**

**Individual Reflection and Final Exam:**

**Deliverable 6 (D6):**

Final exam – reflection on the project, people, processes and product

**Deliverable 7 (D7) – Week 13-16:**

Delivery/Handover of product to sponsor and review by sponsor

## 2) List of individual contribution form submission checkpoints

(marks may be deducted if the following are not completed)

***Individual Contribution form 1:*** *covers deliverable D1 and D2*

***Individual Contribution form 2****: covers deliverable D3 and D4*

## 3) List of communication and involvement expectations

(marks may be deducted if the following are not completed)

***Induction in week 1 (C1)***

***Team training in week 2 (C1)***

***Ethics, Exam, Presentation training in week 11 (C1)***

***Weekly reports on the private group forum (C2)***

***Meetings Register (for off campus meetings ONLY) (C3)***

***Deliverables Certificate and Time/worksheets (C4)***

***Regular Sponsor Communications (C5)***

***Essential Sponsor Communications (C5)***

## 4) Semester 1 2025 – Schedule

|  |  |  |  |
| --- | --- | --- | --- |
| **Wk** | **Deliverable** | **Product** | **Due –Date & Time** |
| **Assessment 1** | | **TEAM PROJECT INDUCTION** | **25 Marks** |
| **1- 2** | **C1** | Attend and participate in  Week 1 Induction  Week 2 team training | **5-7pm, Thursday**  **27/02/2025**  **6/03/2025** |
| **1 - 3** | **D0** | Individual PACE & Work Readiness – PRE survey | |
| 3 | **D1** | Feasibility Report & Team Manual\* | Thursday 13/03/25 |
| 3-6 | **C5** | Share Feasibility Report and Requirements/Scoping Document with Sponsor | Before D2 |
| 6 | **D2** | Updated D1, Project Plan and Requirements/Scoping Document, Project Progress\* | Thursday  3/04/25 |
| 6 | **Individual Contribution  Form 1** | \*\*Checkpoint to complete first half Individual Contribution form on iLearn  For D1 & D2 | Saturday 5/04/25 |
| **Assessment 2** | | **TEAM PROJECT** | **50 Marks** |
| 7-8 | **C5** | Present MVP to client | Before D3 |
| 8 | **D3** | Updated D2 documents, plus project Documentation, Prototype/MVP\* | Thursday 1/05/25 |
| 10-11 | **C5** | Present MVP to client | Before D4 |
| 11 | **C1** | Week 11 Presentation, Ethics, Exam, Preparation | **5-7pm, Thursday**  22/05/2025 |
| **11-14** | **D0** | Individual PACE & Work Readiness Survey – POST survey | |
| 11 | **D4** | Updated D3 deliverables, plus user documentation and retrospective\* | Thursday 22/05/25 |
| 13 | **D5** | Project Presentation / Demonstration | Thursday 5-9pm  5/06/25 |
| 13 | **Individual Contribution  Form 2** | \*\*Checkpoint to complete second half Individual Contribution form on iLearn  **For D3 & D4** | Friday 6/06/25 |
| **Assessment 3 - INDIVIDUAL PROJECT RETROSPECTIVE - 25 Marks** | | | |
| **14/15** | **D6** | Individual Project Reflection -Final Exam | Online–date TBA |
|  | **D7** | Final Delivery of the Product to the sponsor. This should occur by Week 13 but can be extended to end of exam period or Team grade will be (I) Incomplete.  Additionally, upload to iLearn a complete set of the latest version of all project documentation (other files are optional) | Thursday 5th June up to Thursday of Week 15, June 19th. |

\*For deliverables 1-4 - **One** team member in the group should **submit a single pdf** **named ‘Group[num]\_Del[num].pdf’** that includes the Deliverable Certificate (which includes timesheets) at the start of the document. Place content in the order used in this document.

For Deliverable 7, on iLearn upload a zip file that includes the latest version of all documents created over the semester.

|  |  |  |
| --- | --- | --- |
| **Additional Activities – penalty may apply for non-compliance** | | |
| **C1**  **Classes** | Attend and participate in Week 1 to learn about unit structures and meet team and sponsor.  Attend and participate in Week 2 team training.  Attend and participate in Week 11 ethics, presentation and exam training. | Weeks 1, 2 & 11 scheduled class |
| **C2**  **Weekly  reports** | Start a new thread for each week with Group # Week# in the thread title. One per team.  Stating – weekly activities, progress, any meetings (date, time, location, attendees), issues, work to be done in coming week by each individual.  Marks for the group may be deducted from the overall grade for < 8 satisfactory weekly reports. | Via iLearn Forum – post to team only |
| **C3**  **Meetings Register** | Each time you meet **off campus with your client**, before the meeting record the upcoming event.  Create/Add a post to Meeting Register thread in forum with the following information:  Date, time, location, 2 phone numbers, names of all students attending, sponsor name | Via iLearn Forum – post to team only |
| **C4**  \***Deliverables Certificate and Time/work sheets** | Each student from each group will have to sign the front page of the deliverables certificate. One person from each team will upload the deliverables submission to iLearn by the due date/time.  On the reverse side of the deliverables certificate include time/worksheet   * Group by student, * Task * Duration (Hours) * Complexity (high-medium-low) * ADD a total row for each individual that shows their TOTAL and grand total that shows the GRAND TOTAL of hours for the whole team.   Include ALL tasks/activities (e.g. meeting attendance, research/reading/training, etc) not just those spent on the deliverable.  Marks for a submission (i.e. deliverable) may be deducted for missing/incomplete/incredible and far-fetched timesheets | Template on iLearn under Project in [Deliverables Certificate/Cover sheet] |
| All email correspondence MUST be via the MQ student account. other formats **may** be ignored. Please **include group number** in all correspondence. | | |

**C5 REGULAR & ESSENTIAL SPONSOR COMMUNICATION**

In order to deliver valuable outputs within the semester, you are expected to follow agile processes including regular and frequent communication with your sponsor to obtain their feedback on your ideas and work. Your sponsor is not responsible for editing or assessing your documents. Make sure what is presented to them is professional and businesslike.

Deliverable 1: Discuss the Feasibility Report with your sponsor to ensure any misunderstandings are clarified, particularly concerning **their** problem, opportunity, mandates and assumptions. **After** receiving your Deliverable 1 feedback on iLearn and also updating based on your improved understanding, discuss with the sponsor what parts of the Feasibility Report they are interested in and provide them with either an Executive Summary or the full report, as described in the Deliverable 1 section.

Deliverable 2: **Before** Deliverable 2 due date, you must obtain sponsor feedback to the Requirements/Scoping document. Also include the feedback and what changes were made. This feedback and response should be included in the submission.

Deliverables 3 and 4: **Before** D3 and D4 due dates, you should have demonstrated your prototype/minimum viable product (MVP) to your sponsor. In the Prototype section, your submission should include when/how the demonstration was done, the feedback you received and your response to it. You will lose marks for your prototype/MVP if you do not include information about the prototype in your D3 and D4 documentation and regarding the meeting with your client, the feedback you received from them and how you will respond.

# Deliverable 1 Details

Deliverables Certificate

Feasibility Report approx. 8-15 pages

Team Manual approx. 3-6 pages

Please liaise with your industry sponsor about their needs, problem or opportunity description and the solution sought. There may have been supporting documentation you received. The team should do further research to understand better the organisation, domain, problem, task, solution options, etc. Based on the information given and your research, discuss the problem, the activity/task, the domain and issues with your team so that you get a bigger picture of the context the problem fits in. Particularly consider the IT needs related to that activity and develop an initial proposed IT solution to one or more of the problems. You will need to describe the problem, alternative solutions (even if a specific solution has already been requested) and justify the solution you recommend.

Use the template on iLearn under resources for your Feasibility Report. Please ensure your Deliverables Certificate states which type of project you are doing: software, game, data science or cybersecurity. In the rare case that a project might cover more than one category, please discuss this in the problem description section of the report and provide an explanation. Assumptions –It is important to include assumptions. If those assumptions are wrong, then your plans and project will be compromised. Assumptions could include access to certain resources, scope of the system, support that will be provided, platform that will be used, etc. It is good to elaborate these so the sponsor can see them and correct any false assumptions.

After you submit and receive your feedback on Learn, update your submission and discuss with the sponsor what sections of the Feasibility Report are of interest to them. As a minimum you need to provide them with a 1-page Executive Summary stating the sponsor’s problem and opportunity. What you provide to your sponsor will be submitted as part of Deliverable 2.

Use the headings in the rubric below for your Team Manual. Discuss team structure and roles. Review together the 2023 ACS Code of Professional Ethics (see iLearn). Describe the team’s values and how you will adhere to the Code. Clarify and justify the approaches and/or tools that will be/are being used for project management, team communication and to manage change or conflict. Bear in mind the 2023 ACS Code of Professional Ethics as you consider mandates, current situation, benefits, alternative solutions and your recommendation.

Deliverable 1 rubric

|  |
| --- |
| Problem Identification & Project Classification |
| Opportunities |
| Mandates |
| Current Situation |
| Tangible & Intangibile Benefits |
| Alternative Solutions |
| Recommended Solution |
| References/Abbreviations/Assumptions |
| **TOTAL** |
| **Team Manual** |
| Team Organisation and Structure |
| Team Values & ACS Code of Professional Ethics |
| Project Management Approach and Tools |
| Communication Plan and Meeting Schedule |
| Change Management and Conflict Resolution |

# Deliverable 2 Details

Deliverables Certificate

Feasibility Report/Executive Summary provided to sponsor (3.5 marks)

Updated Team Manual (3.5 marks)

Project Plan (7.5 marks)

Project Progress (3 Marks)

Requirements Document / Scoping Document (7.5 marks)

## Feasibility Report/ Executive Summary

You should have shared your revised Feasibility Report OR Executive Summary with your industry sponsor after reviewing and revising according to the Deliverable 1 feedback. For D2, submit what you have provided to your industry sponsor. I will be checking that your sponsor has received this document. If submitting an updated Feasibility Report, please include a revision history table to indicate everything that has changed.

## Team Manual

The team manual is a living document. Please address any issues identified in Deliverable 1 feedback and anything that has changed e.g. communication or conflict strategy. Include a revision history table to clarify what has changed. Note that the project plan will expand on your initial project approach, management and tools and handling of change that you had in the team manual, so those aspects do not need to be updated in the team manual and will be marked from the Project Plan.

## Project Plan

The Project Plan should not exceed (20) A4 sides, excluding appendices. See the marking rubric for content to be included and follow these headings and order.

Include the following in the *Project Plan*, in this order:

Statement of purpose [for plan] and scope [of project]

Risk Management:

* Development risks and their management, including a risk matrix/table that includes the risk, description, probability/likelihood, effect/consequence and risk level. Mitigation strategies must also be included.

Resource Management

* Project resources - people, hardware, software, other resources­­­­

Change Management

* Changes to requirements and scope
* Change to documents, code and data (i.e. version control).

Quality Management

* Discuss how quality will be monitored and assured

Schedule

* Using the project management tool of your choice (e.g. Trello, MS Project, ClickUp) include chart/screens that clearly show planned tasks, deliverables, time-line, resource/task allocations for the entire project. Describe the purpose of deliverables. Also, clarify the process model you are using and why. Your schedule must be consistent with the deadlines and process life cycle you are using. See further NOTE below.

Assumptions

Include a list of assumptions around resources, availabilities, tools, techniques, processes, standards, communication, expectations and anything else your project relies on or assumes. This will help you think about them and whether they are reasonable and also help the marker/review team to understand why you have done certain things. Please review the assumptions as a group before submission.

Standards/Templates/Appendices/Forms

* Some teams will include standards e.g. coding or document standards, forms, etc as part of their project plan to provide further guidance and detail. These are not specified as each project will be different. They are also optional. But if included they should be referred to the main document so the reader knows they exist and how they can be used.

NOTE: For software development and games projects, we are using an agile software development life cycle (SDLC) (i.e. process model) because the requirements are often not fully known and will emerge as the project progresses based on the client’s feedback. Data science projects should follow the intent of an agile data science process (<http://www.datascience-pm.com/what-is-agile-data-science/>). Agile approaches (e.g. SCRUM and Kanban) are widely used in industry because agile methods allow all stakeholders to communicate and validate their ideas sooner. Research what agile methodology best suits your project.

## Project Progress

Provide a summary (up to one-page) that describes what the team have done so far related to the project, which is additional to the Feasibility Report, Team Manual, Project Plan and Requirements/Scoping Document. Consider the following and use these headings:

* Research and Training – what has been investigated? What knowledge and skills gaps have been identified? How will they be filled? What training/preparation has been done.
* Project Tasks and Activities – What has been started/completed so far?
* Testing, Verification and Validation – what testing, V & V will be needed? What has been done so far? What feedback has been received and how has/will it be acted upon?

These activities, and who did them, should be listed in the Timesheet which is part of the Deliverables Certificate.

Please provide the above documents in the order listed above and, in the rubric, below.

Marking scheme for ALL project streams

|  |  |  |
| --- | --- | --- |
| **Feasibility Report / Executive Summary** |  | **3.50** |
| Problem Identification /Opportunity/Benefits |  | 1.25 |
| Mandates and Current Situation |  | 1.0 |
| Alternative and Recommended Solutions |  | 1.25 |
|  |  |  |
| **Updated Team Manual** |  | **3.5** |
| Team Organisation and Structure |  | 1.0 |
| Team Values & ACS Code of Professional Ethics |  | 1.0 |
| Communication Plan and Meeting Schedule |  | 1.0 |
| Conflict Resolution/Negotiation |  | 0.5 |
|  |  |  |
| **Project Plan** |  | 7**.5** |
| Statement of Purpose/Scope of Project/Description |  | 1.0 |
| Risk Management |  | 1.25 |
| Resource Management |  | 1.0 |
| Change Management |  |  |
| Managing requirements and scope change |  | 0.5 |
| Version Control |  | 0.5 |
| Quality Management |  | 1.0 |
| Project Schedule |  |  |
| Tasks/Deliverables/Process |  | 1 |
| Timeline |  | 0.5 |
| Resources Allocated |  | 0.25 |
| Assumptions |  | 0.25 |
| Standards/Templates/Appendices/Forms |  | 0.25 |
|  |  |  |
| **Project Progress** |  | **3** |
| Research & Training |  | 1 |
| Project Tasks and Activities |  | 1 |
| Testing, V & V |  | 1 |

***\*\* Continue on with the Requirements / Scoping Document specifications and rubrics for this deliverable.***

## Requirements Document/ Scoping Document

(6-20 pages)

### A note to all groups

***Overview: you must provide the requirements/scoping document to your client before the due date for their feedback***. I will assume that what I receive has been confirmed by the client. You can expect to make changes to your document based on the client’s review. It is best, though not essential, to send your draft document to the clients AND also arrange to meet them to obtain face-to-face comments. Your client may also like to see your project plan. Ask them. Make sure you clarify and confirm with them any resources you identified in the project plan that you expect from the client.

**Include at the END of your Requirements/Scoping Document a page that describes (1 mark loss if not done):**

* Meeting date and time:
* Feedback received: If you don't hear back before the due date, clarify that in your document, say when it was provided to the client and clarify that you will provide the feedback and responses in your weekly report once you receive them.
* Team response/action points: You do not have to do the changes requested before submission but you should outline what action you will take.

**Choose which of the following rubric sections to follow for your scoping document / requirements document:**

* Cybersecurity
* Data Science
* Game Development
* Software (Default if unsure / not specified otherwise)

### Details for CYBERSECURITY projects

Cybersecurity majors should have gained experience with a range of methods, tools and documentation in your previous units. Your client is also likely to have examples and preferred methods, tools and documentation to be used in your project. Please discuss these with your client and describe them in the section on “Deliverables Due” in your project plan. You will need to extend the project plan to a more comprehensive scoping document. Please refer to the marking rubric for content/sections in your scoping document.

The scoping document focuses on what your project is about. This scoping document is intended as a way of identifying your analysis of the problem space. The scoping document for Cybersecurity projects is aimed at outlining / communicating the following things for your team, the staff in The PACE unit, and your sponsors / stakeholders. The guidance below is to help you understand what to consider and describe in your document. For rubric sections relating to data, please see data understanding and data preparation points in the Data Science guidance section.

**Part 1: analysis overview (intent / motivating factors)**

1. The purpose and scope of activities being considered

* What systems are being investigated / profiled / attached / guarded and why?
* What kind of project are you undertaking?
  + An attacking team? (red team)
  + A defensive team? (blue team)
  + An overall security assessment analysis with recommendations?
  + …

1. The understanding (high level overview) of attacks and vulnerabilities that are going to be investigated
   * What attack vectors are being considered / reviewed / researched / attempted?
2. The types of adversaries that will be considered / profiled as part of any defensive or offensive strategy the team will be undertaking

* This is akin to grouping adversary profiles into different groupings (e.g. what are the different kinds of bad actors and what would their goals be?). This can help to consider how to guard against certain types of attackers and preventing their intended outcomes.
* What resources would each of these different adversary groups have at their disposal to achieve their outcomes?

1. The detection methods that are being considered / are available for investigation. You need to understand the important role of threat detection in any security system/solution. Even if your project is a simple application/plugin, if you don't pay attention to detection, then if an incident happens, you will have no clue how it happened. And even worse, your system/solution has no embedded mechanism to respond to threats before they become incidents. If this has not been part of your considerations in the final product, it is highly recommended to include Threat Detection function. For instance, in providing the proposed end-to-end encryption and storage solution, is there any chance that someone would be able to intercept or tamper the data transmission? If so, how would your solution respond to that? What do you do to prevent these kind of threats from happening again?
2. Monitoring of assumptions. Description of how the identified assumptions will be monitored in your project to ensure they have not been invalidated.
3. Document conventions being followed in this document (and what each of the sections cover – this is useful for anyone who doesn’t know what to expect in this document).

**Part 2: analysis activity details / specifics (mechanisms for investigation being considered)**

1. Security feature extraction

* This should expand on the points in (Part 1: 1). and (Part 1: 2).
* What security features / weaknesses are initially being considered?

Part 2.1 focuses on your solution, i.e. what security features you will provide in the final product.

1. Attack / vulnerability analysis

* This should expand on the points outlines in (Part 1: 2).
* In Part 1, you outline attacks / vulnerabilities being investigated
* Here in Part 2, is a chance to answer questions like
  + “What does this look like in the systems we are focusing on”?
  + Are there any indicators that might be a sign that this kind of attack / intrusion is currently occurring?
  + Are there any impacts / results which can show that such an attack / intrusion has occurred?

Part 2: 2 answers why you want to provide these security features by outlining the attacks/vulnerabilities that you have investigated in the current system (or in other solutions that you have investigated but didn't choose).

1. Defence countermeasures

* Identifying those points in Part 2: 2. … now it is time to consider what defence countermeasures that could be used / developed as part of any strategy.
  + If you are a red team project, then consider how these countermeasures might impact your approach.
  + If you are doing an overall security assessment / providing recommendations, then consider how any current defence mechanisms may impact your investigations / obscure other issues / limit the investigation capabilities.
* This is also a chance to have more details on the points outlined in Part 1: 4.

1. Architecture, Algorithms, and models
   * This is an expansion / elaboration on (Part 1: 4). In that section, you’ve outlined the potential detection methods being considered, here is where you elaborate on these in more detail.
2. Security testing
   * What are the different kinds of tests / assessments being considered? (this may change over time as more is discovered about the systems under focus).
3. Deployment / monitoring / reporting
   * Intended approach for deploying / running any tests or analysis scripts
   * How the monitoring of progress and results will be undertaken
   * What reporting / results / recommendations are being provided to the client.

### Details for DATA SCIENCE projects

Data science projects will need to extend the above project plan to a more comprehensive scoping document by adding the extra sections as described below. Also, see the marking rubric. For Data Science projects, you will need to follow a project management method such as CRISP <http://www.datascience-pm.com/crisp-dm-2/>. For phase 1 (Business Understanding) you have already been asked to create a feasibility report and a project plan.

In the scoping document, your team is aiming to communicate the intended scope of work. However, these might change or evolve as you go through your project… and that is ok, because this is a living document and should be kept up to date / reviewed with stakeholders. In the scoping document, include each of the following sections:

1. Data Understanding: collect initial data; describe data; explore data; verify data quality
   * What are the initial data sources being used / provided?
   * What data collection methods are being used?
   * What is the assumed data quality / structure / completeness?
   * What mechanisms will be undertaken to evaluate the above points? Will you have all the data that you need or will there need to be more data collection methods done during the project?
2. Data Preparation (generally, the most time-consuming phase): select data; clean data; synthesize data; integrate data; format data

* Describe the intended data preparation activities for each of the data sources listed above
* Describe any data processing pipelines that will need to be done. E.g. noise filtering, smoothing, running averages, error corrections, removing outliers, anonymising any datasets, feature engineering procedures…
* If there needs to be different preparation pipelines for different models, then describe the processes needed for each model.
* Also, describe why these steps would make the data more usable for the intended purposes.
* What data storage mechanisms will need to be used during these processes?

1. Modelling: select modelling technique; generate test design; build model; assess model

* Which modelling technique / techniques are being used / compared? Why? What is the intended outcome / question being considered and how does it relate to the chosen model?
* How will the model effectiveness / validity be checked?
* What test data needs to be provisioned / used for the above points?

1. Evaluation: evaluate results; review process; determine next steps

* How will the results be reviewed? Are there expectations to be compared to, or is this more of an open exploration / unknown result? If so, how will these results be reviewed / validated?
* What next steps or questions are being considered depending on the results / outcomes?

1. Deployment: plan deployment; plan monitoring and maintenance; produce final report; review project.
   * What is being given to the client? What training / documentation will be provided?

### Details for GAME projects

**A requirements document would have:**

\* High concept: A concise statement of what kind of a game it is, focusing on what the player does and what they experience.

\* Core experience: What are the key experiential goals? Is it challenging and exciting? Relaxed and creative?

\* Learning outcomes: For a serious game, what are the practical outcomes it is designed to produce? How does it change the player’s understanding or ability? Does it motivate the player to do some task?

\* Target audience: Usually expressed as a persona, with specific preferences, needs and requirements. E.g. “Malcolm plays puzzle games on his iPhone while travelling on the train to work”. This gives you some constraints on who your game appeals to, where/when they are going to play it, for how long, etc.

\* Target platform/interface: The device it is going to be played on, including considerations such as screen-size, controllers (mouse/keyboard/touchscreen/joypad), graphical capabilities, etc, and why these are appropriate for the kind of game you want to make. These can change as you develop, but you should always be working with a target platform/interface in mind.

Please follow the following format:

1…...Introduction

1.1 Document Convention/Intended audience

1.2 Game High Concept and Scope

1.3 Definitions, Acronyms, and Abbreviations

1.4 References

2 ......Overall Description

2.1 Core Experience

2.2 Target Platform

2.3 Target Audience and other User Classes and Characteristics

2.4 User/Training Documentation

3 ......Requirements

3.1 Intended Learning Outcomes

3.2 Core Gameplay Features

3.3 Other non-gameplay Functional Requirements

3.4 Design and Implementation Requirements/Constraints

3.5 Usability Requirements

3.6 Other Non-functional Requirements

### Details for SOFTWARE projects

If your project concerns software (e.g. desktop or mobile application, website, game) you will need to create a Requirements Specification. If the product already exists (from a previous team or off the shelf product) you should reverse engineer your own requirements document to understand the product specifications.

System/Software Requirements Specification (SRS)/Requirements Document

The SRS should follow the IEEE standard below and use these headings:

1…...Introduction

1.1 Overview/Document Convention/Intended audience

1.2 Purpose (of software)

1.3 Scope – including a context diagram (Level 0 Data Flow Diagram)

1.4 Definitions, Acronyms, and Abbreviations

1.5 References

2 ......Overall Description

2.1 Product Perspective

2.2 Product Functions

2.3 User Classes and Characteristics

2.4 Operating Environment

2.5 User Documentation

3 ......Requirements

3.1 Functional Requirements

3.2 Design and Implementation Requirements/Constraints

3.3 Usability Requirements

3.4 Other Non-functional Requirements (Ensure that you specifically discuss security)

Follow the above headings. For guidance refer to the IEEE SRS Standard. Please do not pay for the IEEE standard which you can access for free if you are logged on to Macquarie University Networks. You must be signed into the MQ campus network for it to recognise the institution. (this does not mean you can login to IEEE with your MQ OneID).

To access off campus:

https://ieeexplore-ieee-org.simsrad.net.ocs.mq.edu.au/document/8559686

The unit website includes some SRS examples. If your client has a format they would like you to use, please use that one and check that it covers the above sections.

## Marking scheme for scoping / requirements sections

Marking Scheme for Scoping Document (Data Science and Cybersecurity Only)

|  |  |  |
| --- | --- | --- |
| **For Data Science projects** | **For Cybersecurity projects** |  |
| Document convention/intended audience | Document convention/intended audience | 0.25 |
| Purpose/Project Scope & Context Diagram/ | Purpose/Project Scope | 0.25 |
| Data Understanding – describe the data | Attacks/Vulnerability Understanding | 0.5 |
| Sources | Adversaries | 0.5 |
| Capture | Attacks/Vulnerability Detection | 0.5 |
| Storage/Environment | Monitoring of Assumptions | 0.25 |
| Data quality | Data quality | 0.5 |
| Data Preparation - cleaning needed | Data Preparation | 0.5 |
| Integration needed | Data (packages, logs, …) Collection | 0.25 |
| Formats needed | Security Feature Extraction | 0.5 |
| Data Exploration – Modelling Modelling technique selection | Attacks/Vulnerability Analysis | 0.5 |
| Model design constraints | Defence countermeasures | 0.25 |
| Model assessments needed | Architecture, Algorithms, Models, | 0.25 |
| Evaluation Requirements & Process | Security Testing (e.g., penetration testing) | 0.5 |
| Deployment – monitoring, reporting, review, training/support) | Deployment – monitoring, reporting, review, training/support, security polices) | 0.5 |
| Client/Partner Feedback | Client/Partner Feedback | 1 |
| Follows Format Specified/Well-presented | Follows Format Specified/Well-presented | 0.5 |
| **TOTAL REQUIREMENTS** |  | 7.5 |

Marking Scheme for Requirements Document (Software / Web and Games Streams Only)

|  |  |  |
| --- | --- | --- |
| **For Application/Website** | **For Games** |  |
| Document convention/intended audience | Document convention/intended audience | 0.25 |
| Purpose/Project Scope & Context Diagram/ | High Concept | 0.5 |
| Definitions/References/Overview | Definitions/References/Overview | 0.25 |
| Product Perspective/Features/ | Core Experience | 0.5 |
| User Classes and Characteristics/ | Target Audience & other User Classes | 0.5 |
| Operating Environment/ | Target Platform | 0.25 |
| User Documentation & Help | User Documentation/Training & Help | 0.25 |
| Functional Requirements (FR)“The system shall …” | Learning Outcomes: description and measurement | 0.5 |
| FR Uniquely identified | Other non-gameplay Functional Requirements | 0.25 |
| FR Organized/structured/grouped | 0.25 |
| FR Covers functionality | Core Gameplay Features | 0.5 |
| FR Unambiguous/testable/consistent | 0.5 |
| NonFR (security, performance, access, etc) | NonFR (security, performance, access, etc) | 1 |
| Design/Implementation Req (platform, language, etc) | Design/Implementation Req (platform, language, etc) | 0.25 |
| Usability Requirements (ease of use, training, etc) | Usability Requirements (ease of use, training, etc) | 0.25 |
| Client/Partner Feedback | Client/Partner Feedback | 1 |
| Follows Format Specified/Well-presented | Follows Format Specified/Well-presented | 0.5 |
| **TOTAL REQUIREMENTS** |  | 7.5 |

# Deliverables 3 & 4

**Common sections for all groups:**

Deliverables Certificate

Updated Project plan (with revision history + new “Handover Requirements” section)

Updated Requirements/ Scoping Document (with revision history)

Project Documentation

Prototype / Product (MVP)

+D4 Team Retrospective

+ D4 stream-specific user document

(Feedback for Deliverable 3, 40 marks for Deliverable 4)

## All Teams: Deliverable 3 and 4 Rubrics

|  |  |  |  |
| --- | --- | --- | --- |
| **Software** | **Games** | **Data Science** | **Cyber** |
| **D3 & D4 TEAMS TO IDENTIFY AND JUSTIFY FOR INCLUSION/EXCLUSION FROM PROJECT DOCUMENTATION – 12 Marks** | | | |
| Use case diagram | Art book | Feature Engineering (selection, construction) | User stories describing security/privacy attacks |
| Use Case descriptions and User Stories (Well-structured, sensible, complete) | Storyboards | Detection of intrusions / vulnerabilities |
| System Design Document | Design Document | Solution Architecture | Defending Solutions Architecture |
| Design – includes UML models, structure charts, Report Layouts | Functional Design - – includes diagrams and Report Layouts | Non-technical concerns/approaches |
| User Interface Layouts, Screen Navigation | UI mock-ups | Algorithm/Models/Methods | Algorithms/Security Rules |
| Data Definitions/Schemas/ER | Data Definition | Detailed Data descriptions | Data Description / Feature Engineering |
| Test plan | Playtesting & Functional Test Plan | Model Evaluation | Security Test Plan |
| Test-case specifications | Functional Test-Cases & Playtesting results | Performance Evaluation results | Testing Reports |
| D4 ONLY - NOT OPTIONAL – 6 Marks | | | |
| User Manual  **(D4 only)** | Help/Training  **(D4 only)** | Scripts/Model Execution  **(D4 only)** | Recommendations / Monitoring Plan  **(D4 only)** |
| Team Retrospective  **(D4 only)** | Team Retrospective  **(D4 only** | Team Retrospective  **(D4 only** | Team Retrospective  **(D4 only** |

ASSESSMENT 2- Team Project Rubric

|  |  |
| --- | --- |
| **Revised Project Plan** | 3.5 |
| **Revised Scoping/Requirements** | 3.5 |
| **Project Documentation** | 18 |
| **Prototype/MVP** | 15 |
| **Not well-presented, spelling mistakes, language not businesslike** | PENALTY |
| **Deliverables certificate not included** | PENALTY |
| **Project Presentation** | 10 |
| **TOTAL** | 50 |

## All Teams: Deliverable 3 & 4 submission instructions

PLEASE INCLUDE YOUR TEAM NUMBER in the file name.

The next submission contains multiple documents. However, for marking I would like one .pdf document in this order:

1. Revised Project Plan/Quality (complete plan, with your changes and revision history), including Assumptions at the end of this document as per Deliverable 2.
2. Revised Requirements/Scoping document (include complete document with your changes and revision history)
3. Project Documentation
4. MVP/Prototype Document
5. Team Retrospective document (All streams for **Deliverable 4 only**)
6. User Manual OR Help/Training OR Scripts/Model Execution OR Recommendations/Monitor Report (Stream specific document for **Deliverable 4 only**)

Each of these documents will have their own Table of Contents - or if it suits your formatting better, you could make one TOC at the start. Please use hyperlinks to jump to each part of the document. Each document should have its own revision history. You could create these pdf documents separately and then do a merge - if you have the right software. Include Deliverables Certificate as the first page.

**Warning-** Submission of documentation should be done by the due date via iLearn. Documentation must be consistent and relevant for the project and prototype demonstrated. The client typically is interested in the product, not the documentation. A poor prototype or redundant/inconsistent documentation will bring down the documentation mark.

## Common sections for all groups

Add revision tables to the start of all documents just after the TOC to indicate the revision number, date, person and change to the previous version (be specific about what changed / why).

### Updated Project Plan

The following is required:

1. **Include the heading in the project plan: Handover requirements.** This section can be added after your schedule to explain in detail what the client needs. Handover will be different according to what the project is. It's about making sure the client gets what they were expecting and need before the team disappear. So any data, software, algorithms, scripts, test cases, testing tools/environments, outputs and documentation would be handed over together with training/manuals that lets them go forward with it - including reports or test cases showing current output and/or what is fully functional or not.

For all projects, the point is to discuss with the client what they need at the end of the project. Make sure they have everything they need and know how to use what you have given them. There is no set format or requirement for the marker.

For games and software projects, think about who will do play testing and/or acceptance testing, asking questions such as when will testing start, when and what devices/sites does the final product need to be deployed on, who will maintain the system, how will the system be maintained, what are the user manual/training manual/installation/installation wizard/administration parameters requirements, what database/file setup is required, what documentation is required.

For cyber and data science projects, think about how the client will use what you have done. Do they need a list of recommendations and actionable items, scripts for rerunning machine learning algorithms/updating visualisations or vulnerability tests, a monitoring report to ensure processes are followed/tests are run, etc.

**This section needs to clarify the intended nature and content of the stream specific mandatory part of D4** i.e. User Manual OR Help/Training OR Scripts/Model Execution; OR

Recommendations/Monitoring Plan.

1. **A revised and updated version of your project *schedule*,** that takes into account any schedule revisions, covering the balance of the project, that have arisen since you submitted the previous schedule. Anything else that has changed such as team structure, resource allocation, risk evaluation, change management processes, communication strategy, etc should also updated in the plan and quality manual and included in the revision history. Resubmit the entire updated document.

## D3-D4 Common sections for all groups - continued

### Updated Requirements / Scoping Document

Add a revision history table at the start of your document to clarify all changes made from Deliverable 2. No new sections are required. Please identify improvements and changes. This will involve team review of the document, review of feedback from previous Deliverables, inclusion of any project changes or sponsor feedback.

Project Documentation

For Deliverable 3, the first step is determining what project documentation is needed. Every project is different. Please use the knowledge you have gained in other units and through industry experience together with stream specific information and rubrics to determine what documentation you need. Speak with your industry partner to ask them what documentation they require/suggest. If a rubric section/heading for your relevant stream is not deemed as relevant to your project, please include the heading and clarify why it is not relevant.

If your project includes more than one stream (e.g. a dashboard that presents various data visualisations, a gamified website, software to manage security issues) you may draw on multiple stream specific sections and rubrics to determine what documentation is relevant to your project. Please clarify to the marker what streams you have drawn on. You do not need to justify all the sections you chose not to use, but you can particularly if you would like marker feedback on your decision/reason.

You will receive feedback on the project documentation you identify and include in D3. Update D3 according to feedback, project progress and changes for assessment in D4.

## D3- D4 Common sections for all groups - continued

### Prototype / MVP Document

**Before** the due date/time you need to arrange a time with the client to demonstrate your system/present your current progress and receive feedback. The team must organise that meeting. All team members are expected to attend. A valid reason for non-attendance by a team member must be arranged before the meeting. When the demonstration/meeting is arranged please let the convenor know of the arrangement via the meetings thread on iLearn.

Under the heading “Prototype”, include at least a page in your Del3 and Del4 documentation to present and discuss your prototype. Screen shots and how the product looks and works should be included. For MVPs which are reports, include samples of your report. The marker is seeking to determine what you have done so far and what the client has been shown.

Also include a subheading “Sponsor meeting, feedback and response to feedback” in the “Prototype section”. Include details of the sponsor meeting and feedback. All sponsor feedback on any aspects of your project should be included in this section. Also clarify how the team have or will respond to that feedback.

If you have not been able to arrange a meeting before submission due to sponsor unavailability state that under this heading and when the meeting is scheduled. After the meeting, include the feedback and response in your next weekly report submitted on iLearn.

I will also be contacting the sponsor. The client will be asked to confirm the meeting and their feedback via a survey sent to them.

### Prototype Feedback Adjustment

The marks for your prototype are made up of what you present in your document (up to 10 marks. Additional marks will depend on the feedback reported and the client’s feedback to me. Marks are allocated as follows: 0 if no evidence or mention of a prototype, 3 if some scattered evidence identified, 6 if evidence provided is brief, just screens and description or just feedback, 8 if shown with screens and feedback provided. 10 if shown in detail with feedback and responses to feedback. 12 if sponsor is happy 15 if sponsor is very happy. If the sponsor is not happy, marks may be deducted.

### Team Retrospective **D4 ONLY** 3-5 pages

As a team, you should review all aspects of your project (information, outputs, documents, weekly reports, meeting minutes, etc) and reflect on what you did, why you did it, what worked and what should have been done differently. Structure the reflection so that it is easy for the ready to identify your answers to these questions.

You may include information / diagrams / snippets from other documents to make your discussion more informative. There is no set structure but one approach could be to reflect upon each of the phases you went through: feasibility; project planning and scoping/requirements; design, implementation and testing; handover. Also, consider the unit learning outcomes and how the team have achieved these.

## D3 D4 Documentation for DATA SCIENCE projects

The main objective with the iterations is to build up as much of the data processing pipeline and describe the decisions / choices made - as well as how any choices and outputs will be evaluated. Someone else coming in late to the project should be able to use this deliverable to understand what the team is doing and where they are up to with their deliverables - including the rationale behind any design decisions.

Students choosing the data science stream can leverage what was built up in data science units (like COMP257 / COMP2200) and discuss what has been done in their project. Much like in the project portfolio and project presentation from COMP257 / COMP2200, the aim here is to communicate different aspects of the project implementation including the data, the goals, the options, the decisions, the choice of models and starting configurations, and the resources available.

For DATA SCIENCE projects, you should seek to establish a baseline model for the project – the simplest model you can think of for the problem. This would be a good deliverable as a MVP since it encourages you to have an end-to-end processing pipeline and to establish a baseline that you can then try to beat with their refined model in the subsequent increments.

Your documentation should include the data manipulation process with clear instructions on how to run them to turn the raw data into the input for modelling. One possible approach could be to load / maintain them in a GitHub / Bitbucket / Firebase repository with appropriate permissions shares. However, this is something that should be discussed with your sponsor and the convenor.

You should present the results of the modelling via evaluations in the form of a report. The report should outline the different models used and the results observed. Interpreting the results and discussing implications for the business questions that prompted the study are also a key part of this. In many cases this can be structured like a traditional scientific paper – material, methods, results, discussion.

Feature engineering: (deciding what you are looking for and how to go about it)

* From the data, are there any trends / ranges to look for?

e.g. if you are analysing time-based movement data, what accelerometer and gyroscope ranges / trends do you want to look for to identify someone that has fallen / collapsed?

e.g. if you are looking at financial data, what does an "upward sale trend" look like?

e.g. if you are looking at population data, or education rates, what "characteristics" would you want to look at and why?

* Describe what data characteristics are being looked for, and how your data pipeline is being processed to generate these features.
* Give each different "feature" or "characteristic" a name and then attribute some form of data ranges / statistical definition.

Solution Architecture: (choice of macro architecture / pipeline)

* Provide an overall description of each section of the pipeline including the data in and out of each "stage". The data details can be properly described in the "Detailed data descriptions" section.
* This would most likely be a more detailed version of the overall pipeline presented in the team's scoping document as some of the stages would now be implemented / finalised.
* Include any resources available / resource processing constraints to each of the sections in the pipeline (e.g. processing / timing limits)

Algorithms / models methods: (detail what is in each part of the solution architecture, including models used and initial conditions / config settings)

* selection of model... there are many different approaches: predictive, supervised / unsupervised, classifiers, ... which are going to be used? why? and why chose those over other approaches?
* Are there any settings needed (eg. in a KNN model, what is the number of the nearest nodes being used in the application of the classifier?)

Detailed Data descriptions:

Data being used, data being generated, data being stored, as well as any summaries and/or reports.

Model evaluation:

* how will any data / outputs be compared / tested / evaluated for correctness and accuracy?
* if you are choosing between models, how will the models be compared / contrasted to see which one has a better performance (e.g. if you are comparing different classifier models, on what basis are you comparing them? Detail each comparison.

Performance evaluation results:

what are the results of any tests run so far and what are the future planned tests for future iterations? (e.g. if this is Deliverable 3, what is planned for Deliverable 4? IF this is Deliverable 4, what is planned before the handover?)

Deliverable 4 (Only) stream-specific document: for Data Science Teams (5-20 pages)

**Scripts / Model Execution**

The *Scripts and Model Execution Documentation* should not exceed **twenty (20) A4 sides.** This is essentially a user or training manual for the one or more users of your MVP. It might include model parameters, how to set up the models, data sources/format, file locations, etc. The intended user/s may differ according to the project and there could be more than one type of user with different documentation needs.

The content of this document is something that you MUST discuss before **Del 3** when you talk to your client about what they expect at handover at the end of the project (see point 1 under updated project plan for Deliverable 3), ask them what their requirements are regarding support/maintenance. Find out what they need regarding training, help, installation, configuration, etc of your product/output.

Like all technical writing, the document should have a clear Table of Contents (TOC) and well-organised content. In addition to documenting your models and how to run them, this document could involve sections for different types of users (e.g. Admin and end users), installation guide, configuration settings, screen shots with example data, APIs, training, steps describing usage troubleshooting/where to get help, etc. Check you have page numbers, or your TOC will have a limited value.

## 

## D3 D4 Documentation for CYBERSECURITY projects

Discuss with your client what they want to receive from you – that will be your MVP. It could be a *Penetration Testing Document* as in the example provided on iLearn. It could be a list of recommendations and vulnerabilities discovered. It could be an overview of attacks or defences tried (if you are doing red team / blue team approaches). Refer to the rubric for content and sections to be included in the analysis, design and testing documentation.

User stories describing the security / privacy attacks:

* What are the points of interest in the system and what attacks were considered / attempted?
* Be sure to include the sections / areas that these were applied.

Detection of intrusion / vulnerabilities:

* What did you find and how were you able to determine that the intrusion was successful / a vulnerability was discovered?

Defending solutions architecture:

* What was the architecture of the system under focus?
* Also, describe the mechanisms / process flow for your own investigations / attacks / defences (depending on the mode of your project). This could be represented as some form of “pen-testing architecture”.

Non-technical concerns/approaches:

* Describe other cybersecurity aspects such as governance, human-factors (e.g. social engineering), processes, staff training, etc, that will impact on the security of IT infrastructure for the organisation.

Algorithms / security rules:

* Describe the pen-testing algorithms / approaches used (or the defending equivalent if you are focusing on that approach).

Data description / feature engineering:

* What data have been collected / used / provided?

Security test plan:

* This is a detailed overview of the entire testing intent for the project including: Timelines, approaches, resources required, times, people involved, approvals, reporting needs, overview and list of test cases. Refer to sample documentation in iLearn for general test plans that could be modified for security projects.

Testing reports:

* Detail the specifics for each test case what / when / where / how …
* What results have been found so far and what remains to be tested / followed up? This can be a comparison to your initial planned scope.
* What tests are yet to be completed / attempted?
* Are there any new tests / approaches being considered after having discovered more about the system under focus?

Be careful not to focus only on the technology side of the matter, rather than taking a holistic view. It may work well if the context and client can support this approach. However, in cybersecurity projects where the client is needing cybersecurity support but not wanting the team to conduct penetration testing or other technical changes to their current system, the team may need to think more broadly about cybersecurity and how to assist their client to make their systems/business more secure, now or in the future.

Note that it is quite common that sometimes clients don’t even know what they want. Clients may have a security concern in mind, so they come with a security project, however, the reality is that they need a holistic IT solution instead. For example, if the organisation was having issues with their current web hosting service and are looking for a new solution provider, there wouldn’t be much value in conducting pen-testing. Instead the team should first focus on requirements engineering and help the client to reconsider the focus of their proposed project. Having said that, cybersecurity can still be the focus but there is a need of a holistic view. What are the major security concerns in this service? Such as users (admins without strong IT background, general public, school kids).

If you are not doing a pen-testing focused project, ensure in the testing section to provide explanation of any changes and discussions on alternatives, rather than pen-testing specifics. What can be tested? For example, the team can focus on the development of suitable metrics for measuring effectiveness of policies. - looking for

evidence of some structured approach to making the recommendations, such

as use of frameworks and standards, methodologies like threat modeling

and attack trees, threat catalogues like BSI Grundschutz, etc. which

would put the recommendations on a more formal footing than just "a list

of good ideas we brainstormed". ;)

Deliverable 4 (Only) stream-specific document: for Cybersecurity Teams (5-20 pages)

*Recommendations / Monitoring Plan*: Provide an early draft of recommendations / results reported so far based on findings. This should not exceed **twenty (20) A4 sides.** The intended recipients will differ according to the project and who is the target recipient of your MVP (e.g. the sponsor’s organisation or one of their clients). The document should have a clear Table of Contents (TOC) and well-organised content. Check you have page numbers, or your TOC will have limited value.

The content of this document is something that you should discuss when you talk to your client about what they expect at handover at the end of the project (see point 1 above under updated project plan for Deliverable 3), ask them what documentation they require to support the MVP such as executing, monitoring, training, help, installation, configuration, etc of your product/output.

## D3 D4 Documentation for GAMES projects

**Design deliverables could include:**

*Game design – for in-game functionality*

\* Storyboards: A power-point ‘flip-book’ showing frame-by-frame the core game mechanics, illustrating how they achieve the experience goals

\* Art-book: concept art and/or images from other games or media that represent the art style you have in mind for the game

\* UI mockups: showing the important information elements and how they are communicated to the player

\* Paper prototypes: playable versions of the core gameplay implemented using cards, tokens, dice etc

\* Software prototypes: lo-fi implementations of the core gameplay to demonstrate to “find the fun” — i.e. see whether the gameplay achieves the target experience. Ideally these should be the simplest thing needed to convey the experience. i.e. no art, no polish

\* Design document including the following in-game and out-of-game aspects:

*Game design:* including storyboard, art-book, UI mockups with window navigation diagram to show game screen flow.

*Game mechanics:* how they function doing play, and how they are intended to achieve the experience goals.

*Game scaffolding – for out-of-game functionality*

Design of out-of-game features like leaderboards, setting up permissions, reporting, adding in new challenges / quiz questions.

To document these software features you may use activity diagrams for intended flows/algorithms, use case diagram (for different out-of-game features). You can refer to the software development section to see more about documenting software.

System Design Document

This will include the basic architecture of the system and the high-level strategy decisions. Use the following headings and explain if and why it is not relevant for your project, if that is the case. You need to include a description and justification of the:

1. system architecture – including package diagram with description that is consistent with the system architecture
2. storage/persistent data strategy – e.g. relational database versus flat/text files
3. any concurrent processes or data and how they will be handled if any exist
4. user interface strategy e.g. tracker, spoken dialogue, phone input, form/menu-based, GUI, etc
5. design decision choices and trade-offs

Data Definitions: Create a table showing what data is needed to be stored in files/database. Include data field name, type and example. For relational databases, for each table/file show the name of the field, the primary key (if applicable), the field type and an example of data in this field. E-R diagrams are recommended.

Game Testing deliverables:

\* Playtesting should be done at all stages of development (hence the need for rapid prototyping).

\* Playtesting should target specific questions about behaviour and experience: Does the player do what you expect them to do? Does the player feel what you want them to feel?

\* Qualitative testing: observe play and take notes about what players do, interview or survey players to ask them what they feel.

\* Quantitative testing: instrument the game to track relevant statistics: time of play, where do players succeed/fail at the game.

\* Testing: other forms of testing to ensure testing of all functions e.g. adding players, updating scenarios, etc.

Test Spec (This can resemble the test plan and tests case templates from Software projects)

Acceptable documentation for games projects should include:

1. Test plans, including testing strategy (white/black box) and types (unit, system, penetration, regression, etc), detailed test schedule, testing tools and resources assigned, testing milestones and test deliverables and covering scheduling and resourcing of all testing processes.
2. Playtesting questions and results; qualitative testing; quantitative testing
3. For non-game elements include test case specifications:
   1. Identifier
   2. Test description
   3. Input specifications (e.g. actual input to be tested or link to be tested) (INCLUDE range of test values – possible valid and invalid input)
   4. Output specifications (e.g. expected outputs)

Deliverable 4 (Only) stream-specific document: for Games Teams (5-20 pages)

**Help / Training Documentation**

The *Help / Training Documentation* should not exceed **twenty (20) A4 sides.** The intended user/s will differ according to the project. For most games or software projects, the document should enable a moderately computer-literate user, initially completely unfamiliar with the system, to understand and fully utilise its functionality. Note there may be more than one type of user with different documentation needs. Training to use the game could also be provided as part of the game. This could involve special keys and screens with help and/training videos. Screenshots of help/training or the training video could be provided in place of or in addition to creation of a document. Please confirm alternatives to documents with the unit convenor well before any deadline. It is likely you need a combination of both documented (for installation, management and maintenance) and in-game support.

The document should have a clear Table of Contents (TOC) and well-organised content. Content will depend on the project but could involve sections for different types of users (e.g. Admin and end users), installation guide, configuration settings, screen shots with example data, APIs, training, steps describing usage troubleshooting/where to get help, etc. Check you have page numbers, or your TOC will have limited value.

As part of the discussion that you should have already had with your client about handover to them at the end of the project (see point 1 above under updated project plan for Deliverable 3), ask them what their requirements are regarding support/maintenance. Find out what they need regarding training, help, installation, configuration, etc of your product/output.

## D3 D4 SOFTWARE / WEBSITE / MOBILE APP projects

For teams working on applications and websites follow these instructions.

ANALYSIS DOCUMENTATION

Analysis Documentation can include the following:

* Use Case Diagram & Use Case Description (for each use case on the diagram)
* User Stories

Use Case Diagram

This is a graphic model showing the actors, the use cases and the relationships between them. One page should be sufficient. As a rule of thumb – if the description of a use case is very short (e.g. one or two steps only) or very similar to another use case, then consider combining the use cases and describing the alternate courses of action within that use case. Structure the use cases into logical groupings. Remember it’s from the users’ point of view – not the developers. See resource on iLearn on how to draw Use Case diagrams and common misunderstandings and errors.

Use Case Descriptions (one for each use case in the use case diagram)

A use case is a chunk of functionality. You must have a use case description for each use case. This will elaborate all the ways (uses and the steps to achieve them) in which people will achieve them. If you have many use cases, possibly some of your use cases are actually steps in a use case, not a chunk of functionality. e.g. if they just have one step (like "save", "submit", "authenticate"), they are probably a step in another use case and not their own use case.

When you start to write the use case steps, it will become more obvious whether you have identified separate chunks. Also, if you are repeating steps, then this is a candidate for reuse and should be an "includes" use case. Check you are not joining use cases together in sequences. Only includes, extends and generalisation are valid lines between use cases. E.g. “login” should not be joined to other use cases since you could login and then do nothing, or choose from a range of functions/use cases.

If you have 10 chunks of functionality then you need 10 use case descriptions. How will you know what to implement, if you don’t know what triggers each use case, which user initiates, what the steps are, etc?

Please use the template on iLearn. Sub-use cases can be combined into one use case description. For example, if you have a use case Maintain Client with sub-use cases Adding Client, Deleting Client, Viewing Client or Modifying Client, you can just write one use case description for Maintain Client and describe the differences by branches in the use case steps.

User Stories

In line with agile practices, write user stories for your product. See the following link to get some tips: <http://en.wikipedia.org/wiki/User_story>. You can list these in a separate section or add the appropriate user story in your use case description.

DESIGN DOCUMENTATION

Design Documentation can include the following. If you choose not to include any of these items, provide an explanation under these heading.

1. System Design Document
2. User interface layouts / Report layouts (if needed)
3. Window Navigation Diagram (be sure to show backtracks / alternate navigation paths)
4. Data definitions
5. For every use case description create:

Activity Diagrams

OR

Sequence Diagrams (if OO programming language being used)

If classes/objects are being used:

1. Class Diagram
2. State Diagrams for objects with interesting behaviour

System Design Document

This will include the basic architecture of the system and the high level strategy decisions. Use the following headings and explain if and why it is not relevant for your project, if that is the case. You need to include a description of the:

1. system architecture – including package diagram with description that is consistent with the system architecture
2. storage/persistent data strategy
3. any concurrent processes or data and how they will be handled if any exist
4. user interface strategy e.g. tracker, spoken dialogue, phone input, form/menu-based, GUI, etc
5. design decision choices and trade-offs

User Interface Layouts

Show the actual screens or use a drawing package, system builder like e.g. Jbuilder, interface designer tool.

Report Layouts

If you are producing any reports (e.g. weekly sales report, daily summary, transaction listing), you need to design them. You need to consider things like report title, column/page headers, report totals/subtotals, fields, how many per page, etc). Different types of reports have different real estate (e.g. paper size or screen size). For example, if you needed to print a sales docket you need to plan what goes at top and bottom (e.g. name of company, ABN, store location, sales person’s name, payment method, etc) how many spaces you have across and down and how to layout the docket so it will fit on the paper or screen (e.g. computer/mobile) to be used.

Window Navigation Diagram

Show how the different screens will link together (screen flow) and what triggers a transition from one screen to another. Activity diagrams are recommended.

Data Definitions

Create a table showing what data is needed to be stored in files/database. Include data field name, type and example. For relational databases, for each table/file show the name of the field, the primary key (if applicable), the field type and an example of data in this field. E-R diagrams are recommended.

Class Diagram

If you are using object-oriented programming please include a class diagram. Make sure any classes or methods on your sequence diagrams have been included on the class diagram. Method signatures should be given. The diagram must include all of the following:

* classes
* attributes
* associations
* inheritance and/or aggregation (if applicable)
* traversals
* multiplicities

Sequence Diagram

If you are using object-oriented programming please include one sequence diagram for each use case description. It should be possible to read the description and follow what is happening on the diagram. The objects and messages must be valid and shown on the Class Diagram.

Activity Diagrams

If you are NOT using object-oriented programming please include one activity diagram for each use case description. It should be possible to read the description and follow what is happening on the diagram.

State Diagrams

If you are using object-oriented programming include state diagrams for any objects that have interesting states or complex behaviours. A state diagram shows the life cycle of an object and thus all important objects can each be represented in their own State Diagram. However, you are required to consider the life cycle of each object in your system and to submit diagrams for those that have interesting states or complex behaviour. One way to measure if a state is interesting is to consider whether you need to test that state before performing a particular action or if the state changes after an action is performed. What is interesting will depend on the application. In most cases when an object is updated or printed (updated and printed can be states themselves but are generally not very meaningful) that will not change more interesting states such as paid/unpaid, married/single or for sale/sold.

**Testing Documentation**

Test Specifications

Acceptable documentation for software projects should include:

1. Test plans, including testing strategy (white/black box) and types (unit, system, penetration, regression, etc), detailed test schedule, testing tools and resources assigned, testing milestones and test deliverables and covering scheduling and resourcing of all testing processes.
2. Test case specifications:
   1. Identifier.
   2. Test description.
   3. Input specifications (e.g. actual input to be tested or link to be tested) (INCLUDE range of test values – possible valid and invalid input)
   4. Output specifications (e.g. expected outputs)

See templates for Test Plans and Test Cases on iLearn under resources on iLearn. Use of these templates is optional and suited to projects delivering a software product. If you prefer, you can use testing documents from previous units or other source.

Deliverable 4 stream-specific document: for Software Teams (5-20 pages)

**User Manual Documentation**

The *User Documentation* should not exceed **twenty (20) A4 sides.** The intended user/s will differ according to the project. For most games or software projects, the document should enable a moderately computer-literate user, initially completely unfamiliar with the system, to understand and fully utilise its functionality. Note there may be more than one type of user with different documentation needs.

The document should have a clear Table of Contents (TOC) and well-organised content. Content will depend on the project but could involve sections for different types of users (e.g. Admin and end users), installation guide, configuration settings, screen shots with example data, APIs, training, steps describing usage troubleshooting/where to get help, etc. Check you have page numbers, or your TOC will have limited value.

As part of the discussion that you should have already had with your client about handover to them at the end of the project (see point 1 above under updated project plan for Deliverable 3), ask them what their requirements are regarding support/maintenance. Find out what they need regarding training, help, installation, configuration, etc of your product/output.

# ****Deliverable 5 Details****

**Project Presentation (10 marks)**

Each group will be given a 15 minute (12 minutes for presentation and 3 minutes for questions/change over) time slot to present their project and demonstrate their system to the class, sponsors and academics in one of the lecture theatres. You must attend the whole session you are assigned to, not just your project presentation. Each team member must participate in the presentation, but not necessarily for the same length of time. The presentation mark will be based on your individual and group mark. Put your name on the bottom of each slide you present.

Your presentation should describe the problem being addressed, what you did to address the problem and how you went about coming up with solutions. Your presentation should include, assessment of (reflection on) the project and software process and future/outstanding work. Demonstrations should contain: Functionality of software, Non-functional qualities of software; examples of how to the system would be used, by whom and for what purpose.

Make sure that your system will run in the lecture room that will be used. Check with the convenor beforehand if in doubt. You may use the internet and computer in the lecture theatre, but if special software is needed you should demonstrate on your own machine.

As shown in the rubric below, a group mark will be given for presentation structure, communication of content and visual aspects of the presentation. An individual mark will be given for speaking/presentation skills. The four measures all overlap somewhat to make a coherent presentation. Presentation structure concerns the sequence in which the content was delivered and the flow of concepts. Communication of content is how is it delivered - via a demo, video, slides, just talking, how well do we understand what the project was about - you might have a nice structure but then it is not well described, the points are not relevant or they contradict. How understandable, logical and informative was the content communicated.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| |  | | --- | | **Grades/10**  **(U)nsatisfactory (<5) (F)unctional (5-6) (P)roficient (7-8)  (A)dvanced (9-10)** | |  | Presentation  Structure | Communication Of Content | Visual Aspects of Presentation | Presentation Skills |
| Group Number | |  |  |  |  |
| Individual Name | |  |  |  |  |

Each item is marked out of 10. The group marks are averaged. The average of the group mark and individual mark will be the mark you receive.

# Deliverable 6 Handover

Handover to Client (5 marks from Client)

SOFTWARE & SUPPORTING MATERIALS

You must discuss with your client what they need to receive from you. Do they need a manual, install wizard (which platforms/OS)? What files/database needs to be set up, how can they run and maintain your system? This discussion should have started before submission of Deliverable 3 and continue.

When you have handed over what has been agreed, the sponsor must check it works on their setup (or you can check that for them). After they can confirm to the unit convenor they have what has been agree, then they will provide a mark out of 5 for each individual student.

It is not sufficient to hand over a zip file and wish them all the best. You must make sure they can run your system – unless they agreed that they have technical people who will handle this. So you need to make sure your system is fully tested, well documented and bug free before handover. You should arrange a date for handover and allow your sponsor up to week to confirm they can follow your instructions and use the system. Latest date for handover is final week of exam period. Leaving handover to the latest time may mean you receive an incomplete for the current semester as there may not be enough time for the sponsor to provide a mark and for it to be processed in your end of semester results.

Additionally for Deliverable 6, on iLearn upload a zip file that includes the latest version of all documents created over the semester (i.e. D1 & D4 – since D2 and D3 are already updated in D4). This is primarily an archive for the unit. You should update all documents that you will be handing over to your sponsor based on any feedback since the last deliverable. What is submitted will not be assessed, so teams may submit the latest previously submitted version but preferably the documents updated for the sponsor, i.e. the latest version, should be uploaded.

If your code or other files are too large or the structure is too complex to zip and upload, then you do not need to include them in this upload. For all projects, but particularly if you can’t upload to iLearn, please ensure the client has been able to access the files and use them since there will be no other record of them that they can access in the future.