BCIS R&D Project

Student Guide COMP702 & COMP703

Date	Version	Author	Notes
March 2014	1.0	Anne Philpott	Contains collated notes from earlier project assessments resources.
February 2015	1.1	Anne Philpott	Minor updates
July 2015	1.2	Anne Philpott	Updated timeframes for mid-project reviews.
May 2016	1.3	Stephen Thorpe	Minor updates
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Feb 2017	1.5	Stephen Thorpe	Updates to assessment process
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1. Introduction to the Research and Development Project

1.1. Aim

The project aims to integrate and apply the learning from the courses studied in your BCIS. These notes are intended to provide students with a guide to the project goals, process and assessment.

1.2. Introduction

The Research and Development Project papers (COMP702 and COMP703) are described in their descriptors as:

> *"An investigation into a selected area, whether a specific problem domain or an area of business opportunity. The project is typically an original investigation, but considerable flexibility is allowed. Typically, projects will involve commercial software development for live clients, commercial research and development projects on behalf of live clients, or supervised research projects into selected areas specific to the major of the student."*

The learning goals are:

> *By the end of this paper through completion of a significant Research & Development Project students will be able to:*
>
> 1. *Show the ability to successfully undertake original work.*
>
> 2. *Demonstrate a professional attitude.*
>
> 3. *Demonstrate the ability to integrate the different disciplines required to bring a project to a successful conclusion.*
>
> 4. *Communicate effectively with clients and sponsors including team mentors and moderators.*
>
> 5. *Communicate effectively in both written and verbal presentations and in group situations.*
>
> 6. *Effectively manage, monitor and control the activities involved in a development project.*
>
> 7. *Determine an appropriate process (PM methodology) and accompanying set of deliverables for their project.*
>
> 8. *Show the ability to document appropriately the deliverables for their project - software specifications, project plans, source code, technical reports, white papers, literature reviews, academic articles for publication etc.*
>
> 9. *Select and justify an appropriate PM methodology for their project.*

The types of projects on offer are diverse, keeping with the variety of majors within the BCIS and the potential range of interests of the students. Most projects will involve a sponsor or client external to the University (a company, an institution, or a not-for-profit, for example), but some may include sponsors within AUT. The deliverables of these projects will differ since the scope might dictate that not all phases of larger projects can be completed within the timeframe (2 semesters). However, it is intended that BCIS graduates acquire a broad set of capabilities that will equip them for work as an IT professional or for further study and research careers.

Therefore, each project will produce designed, constructed, and quality-assured artefacts, including supporting material, models or prototypes relevant to each project phase. These materials must provide proof of concept and complete documentation to help product operability, usability and maintainability.

Students will work in teams, as this is a key capability for an IT professional and enables complex, more challenging and realistic projects to be undertaken. For research-oriented projects, students are expected to produce a suitable commercial report or an informative, readable, finished article in a scientific format. Regardless, students must produce a final portfolio demonstrating their work process and artefacts and including a report reflecting upon their experience.

Working in a team (2 to 6 people) increases the chance of a successful outcome. Projects usually require a wide range of skills; finding all these capabilities in a single person is unusual. Working in a group offers a skill mix, and building a successful team is a skill to learn through the R&D project. With an allocated project, your team will face challenges since no known solution will exist. Hence, you will be challenged in this paper to step into a whole new learning domain. How well you respond to this challenge in stepping into the unknown will likely be proportional to your potential for new learning. You will be part of a team and, with others, must communicate your experiences and ideas effectively. Your team will have an academic mentor to support your team in the project.

1.3. Selection of a project

A portfolio of available projects is listed in SharePoint for you to choose from.

You may also find your project and recommend a suitable external sponsor. Details of the specific requirements of this process can be requested from Leanne Bint (leanne.bint@aut.ac.nz). The suitability of any potential student-sourced project must be discussed with the BCIS R&D Project Teaching Team before making any promises to the external company concerned. In some cases, a tailored learning plan must be established in cooperation with the project stakeholders.

Each student enrolled in Part 1 of the BCIS R&D Project (COMP702 or COMP708) will be provided access via SharePoint to the list of the projects available for the semester. The information provided on SharePoint indicates which projects best suit each major.

You **must** complete an online 'Expression of Interest' application on SharePoint to register your project preferences by the specified deadline. The project BCIS R&D Project Teaching Team will allocate students to projects considering student preferences, majors, Grade Point Averages (GPA), and quality, including the timing of the 'Expression of Interest' applications received. Your Grade Point Averages (GPA) across the first two years of the BCIS will significantly contribute to getting on the project you prefer.

1.4. Project Supervision

Each project team is assigned an academic mentor to help students navigate the project process. For example, a mentor may give advice and support before client meetings on your project proposal, understanding and meeting the academic requirements of the project.

Conjoint students may also have an additional supervisor from their BBus, BSc, or BA degree.

The project mentors are allocated contact time for project supervision. During this time, they should:

1. Attend any initial and subsequent meetings with the client as appropriate to support the team.

2. Mark the project proposal.

3. Meet (or be in contact with) the project team to review progress. This should generally happen on a weekly or fortnightly basis.
4. Encourage the production and maintenance of project artefacts and supporting material and the progressive building of the project portfolio (for example, the project plan, taking photos of whiteboards, guiding the structure, and updating project diaries).
5. Assist and advise students on matters relating to the project.
6. Assist students in identifying resources needed by the project team.
7. Assist students in preparing for and participating in the mid-project progress review and provide feedback on progress to students.
8. Liaise with clients where appropriate.
9. Participate in assessing all aspects of the projects they supervise and provide moderation for other projects.
10. Assist colleagues in the effective conduct of the project course.

1.5. Incidental Project Costs

Involvement in a project with external or internal clients may cause you to incur some incidental costs (e.g., travel expenses to a client's premises, sundry stationery, etc.). These costs should not be substantial, and in all but very exceptional circumstances, they are considered course-related costs, similar to any other paper in the BCIS degree. You cannot approach external or internal clients to negotiate payment of or a contribution towards these costs.

If you feel the costs you are being asked to cover are significant, please discuss the matter with the BCIS Project Team.

1.6. Duration and Size of a Project

Most projects are two semesters in duration. This provides time to understand and deliver the project objectives and reduces risks that might occur, including events outside the team's control impact progress (for example, the client is absent for a period). Occasionally if a project is appropriate and suitable students are available, it may be completed within a single semester.

Projects can be 30 points (BCIS) or 60 points (BCIS Conjoint) depending on the student's programme and major or the actual size of the project. By far, most projects are 30 points, with the student enrolling in a single 15-point paper each semester (COMP702, COMP703). Conjoint students (COMP708, COMP709) undertake a 60-point project as it needs to cover the learning outcomes for their BCIS and their other degree. Every 15 points constitutes 150 hours of work by a student. You should use this measure as a guide for your planning. For example, a team of 4 students on a 30-point project must provide 1200 hours of work on a project.

In the proposal (project plan), you must identify the completion date of your project. The academic calendar determines this date typically. An overview of the cycle for the R&D Project is given in this guide, and you should make sure that your plans fit with that broad schedule. R&D Projects are challenging to scope and estimate; hence, it is difficult to find projects that match the time and resources available.

You must meet the project delivery deadline (including deadlines for all the assessments for the R&D paper) set in your project proposal. Otherwise, you will need to provide appropriate reasons for not doing so, including providing evidence demonstrating your understanding of the changes and agreement with your client/sponsor on not meeting the project deadline. Projects not completed on time will generally be ineligible for A or B grade marks.

The adopted project management (PM) methodology must enable the team to capture and deal with

scope and schedule variations. The final phase of the PM methodology must enable the team to create a "project completion and handover plan" in agreement with the client/sponsor. This plan should include the following points:

- Original project scope
- Significant approved changes
- Remaining budget (person-hours)
- Outstanding tasks (yours and the client's)
- Features or Products/Artifacts remaining to be developed
- Completion criteria
- Handover plan. To phase students out of the project and to phase in the client responsibilities and/or a new team.

1.7. Handling Project Problems

This is your project, and handling the problems that arise is part of the learning process that contributes to your project portfolio and reflective report. The responsibility for making things work ultimately lies with your team. Your academic mentor provides support and mentoring. Teams that are successful take advantage of their mentor's expertise to ensure that they meet the goals of their project.

Should problems arise within your team, you should first attempt to solve these as a team. Use the skills you learned from other papers, such as IT Project Management (issue register and conflict resolution process). If your team has attempted to solve the issue and is unsuccessful, document what you have done and then take the matter up with your mentor. Ask for their advice and help. If, for some reason, your team cannot get help from your academic mentor, then contact the Academic Leader(s) of the BCIS Project.

If you have any issues with your project client, please ensure you involve your mentor and paper leader immediately.

It is critical that any issues are handled promptly.

2. Project Components and Assessment Processes

2.1. Introduction

This section of the guide describes the activities and components of a BCIS R&D (Research and Development) Project and sets out the assessment process, expectations, and timeline.

Whilst the projects are varied in their goals, tasks, and expected deliverables, a standard set of components and assessment processes apply to all. The main assessment items are designed to be a fundamental part of the project process and to assist in meeting the project's objectives and the paper's learning goals. The remainder of this section will explain each of these items in more detail and identify any additional material that supports each assessment.

2.2. Assessment- Over Two Semesters

BCIS Assessment					
	Assessment Item	Week	%	Associated Learning Goals	Associated Assessment Goals
First semester- Part 1 (COMP702 & COMP708)					
	Project proposal	6	10	1, 5, 7, 9	Goal identification, Feasibility evaluation, Risk evaluation, Scoping and Planning
	Mid-project progress review	12	10	5, 6, 7, 8	Status and Progress Review, Planning and Tracking, Quality Assurance, Risk management
Second semester- Part 2 (COMP703 & COMP709)					
	Client feedback	12	5	2, 3, 4, 5	Satisfaction, Productivity, Professionalism
	Poster	13	10	1, 2, 4, 5	Project Goal and Result, Communication,
	Reflective report	13	10	5	Reflective Practice, Process and Product Evaluation
	Portfolio assessment (see below)	13	(55)		
	1. Mentor feedback		10	2, 4, 5, 6	Mentor and client communication and collaboration
	2. Project planning & control		10	1, 2, 3, 6, 7, 8, 9	Planning, Monitoring and Change activities
	3. Teamwork & communication		10	1, 2, 3, 6, 7, 8, 9	Team Activity and Process Evidence
	4. Final product		25	1, 2, 4, 5	Result or Delivered Product and Quality (project goal)
	Total		100		

2.3. Team and Individual Components

Completion of the project is a team-based collaborative activity. However, most assessment items will be marked based on the individual contribution to this collective effort. Individual marks for collective items (e.g., Project Proposal, Portfolio) may differ. Details of these assessment items are provided in individual assessment guides. Client feedback is provided on team and individual levels where possible. Mentor feedback is provided to each team member. The reflective report is an individual assessment item.

Students **must,** therefore, be able to demonstrate that the work presented is their own. Mechanisms such as personal diaries, weekly logbooks and reports, project plans identifying responsible parties for tasks, meeting minutes and notes, quality and project review notes and peer reviews could all be used to provide evidence of individual work for later assessment. The separate guides and project class sessions will cover this in more detail.

2.4. Project Class Workshops

Throughout the semester, workshops will be scheduled for all project students. A schedule of these workshops will be provided on Canvas. Unless otherwise specified, all students are expected to attend all workshops. You should record these sessions, time, and critical points and/or learning as you work towards your project in your diary/logbook. The workshops will address topics relevant to the assessments.

You will see 'OFFSITE' time in your timetable for the R&D Class. This 'OFFSITE' time is an addition to your timetable and will improve your R&D Project team's time management and coordination. This is set up as a clash-free time for you to have your weekly scheduled team meetings, work together in the project lab or on-site at your sponsor, perform your quality reviews, meet with your academic mentors, and meet with your sponsor. You should ensure you can meet during those times without clashes in your timetable or other commitments.

We appreciate that juggling the R&D Project with other needs can be difficult. However, your team's performance will be impacted if you have enrolled in other papers or choose to work during this time. It would help you and your teammates if you shift or swap streams and work commitments so they do not clash with your R&D Offsite time.

COMP702- First Semester Assessments

2.5. Project Proposal (10*%, Due Week 6- first semester*)

The first assessment involves preparing a project proposal. This proposal should broadly describe the client or sponsor's goals and/or set of expectations (based on a problem, need or perceived opportunity). The proposal should also deal the proposed approach to achieving an outcome or solution.

The project team **must** meet their project supervisor as soon as possible after the project has been assigned. The supervisor will then assist the team in arranging their initial meeting with the

client/sponsor. The project team must extract sufficient information from this initial meeting and possibly others to develop the project proposal. Information about what should be included in your project proposal and the marking guidelines can be found in a separate document, *'Project Proposal Requirements and Assessment '*, available on Canvas.

As you develop your proposal ready for presentation, discuss it with your project mentor and ensure that the final version is shown to your mentor in time for them to review it for suitability to present. The team is then required to make a short presentation (additional details are in the separate project proposal guide) of your project proposal to your mentor and the moderator or to a panel. This panel may be comprised of the BCIS Project Team, other academic staff, and potentially members of the Computer and Information Sciences Industry Advisory Committee if appropriate.

Your project cannot be confirmed to continue without passing the project proposal.

The team is responsible for scheduling a time and place for their presentation in consultation with their mentor. The proposal document should be provided to the mentor and the moderator at least three days prior to the proposal presentation. After your presentation, your proposal will be marked by your mentor and your mentor will provide you with written feedback and marks for your presentation once the assessment marking has been moderated.

Once your proposal has been approved, you can commence work in collaboration with your team, client and your mentor. Over the two semesters, you should expect that your understanding of the project and its goals will change and that your plans will need to be adapted.

2.6. Mid-project Progress Review (*10%, Due Week 12-first semester*)

The Mid-project Progress Review is scheduled at the end of the first semester of your R&D project in week 12. This review involves your whole team, mentor and moderator, or a panel including BCIS Project Academic Team members. This review aims to track your progress, the status of your project, and your learning. It should also allow you and the academic team to identify any issues in your project that need to be addressed. Details of what is required and how you will be assessed can be found in the separate document *'Mid-project Progress Review Requirements and Assessmen*t' on Canvas.

The result of your mid-project review will be one of the following:

- Your project will be permitted to continue with or without conditions.
    - o This is a normal and hoped-for situation.
- It may be recommended that your project be cancelled.
    - o This is undesirable but may be the best solution if the project shows a general failure to make headway or circumstances surrounding the project warrant its cancellation.
    - o In this case, team members may be reassigned to other projects, with the option of extending the duration of their studies or may be required to accelerate their contribution to complete within the timeline of the other project team. Your mentor will make these decisions in consultation with the BCIS Project Academic team. However, there is no guaranteed outcome for students in this situation, and each case must be negotiated individually.
- It may be recommended that you confer with your client about the state of your project.
    - o In this situation, there may be some problems with the client relationship, availability, expectations from the team, etc., which the team will need to resolve with the client. Your mentor should help lead these discussions.

COMP703 - Second Semester Assessments

2.7. Client Feedback (*5%, Due Week 12, Second Semester*)

Managing client expectations is a key aspect of project success. Feedback from the client is the primary means of demonstrating that the team maintained a productive relationship with its client.

The Client Feedback Form is available on Canvas and is provided in Appendix A of this document. **Please email it to your client in week 10 and notify them that it** must be emailed back to your mentor before the end of week 12. Your mentor will provide the team with the client feedback for inclusion in your portfolio.

Your mentor will award a team or individual mark based on the client's feedback.

Your reflections on the client's feedback should be presented in your Reflective Report.

See the separate *'Reflective Report Requirements and Assessment'* on Canvas for details.

2.8. Poster (10*, Due Week 13, Second Semester*)

The final project poster session/showcase allows students to present their work as a team poster and project deliverables and reflect upon their achievements before an audience, including an assessment team. The project deliverables will include artefacts produced during the project and, depending on the project, may include a demonstration of a software product.

The assessment team will ask questions and consider students' ability to communicate their work in a poster presentation that describes their work's scope, depth and significance and critically reflects upon their experience. See the 'Poster Requirements and Assessment Guide' on Canvas for details.

2.9. Reflective Report (*10%, Due Week 13, Second Semester*)

The formal Reflective Report offers an opportunity for students to reflect upon the significance of their work and what they have gained personally and professionally from the project experience, including identifying areas in which they need further development. This report is not merely descriptive of the project but must include a broader critical dimension that befits a final-year degree course. This critical dimension should consist of reflection upon the project, its significance and broader context, and its personal and professional effectiveness in the conduct of the project. This reflective comment should, in turn, be related to the relevant literature, such as that by Argyris (1996), Argyris and Schön (1974) and Schön (1987), discussing the nature of professionalism and the concept of theories of action.

See the separate *'Reflective Report Requirements and Assessment'* guide on Canvas for details.

2.10. Portfolio (Due Week 13, *Second Semester*)

The outcome of the R&D Project will be a product/s of some sort (for example, an installed system, a report, or a series of reports on a completed enquiry, a set of requirements and models, or a piece of software) that achieves the goals identified by the client. In addition, a portfolio will provide evidence of

how the product was created. Hence, the portfolio must include evidence of processes and practices adopted for team and individual work and provide evidence (artefacts) of all the work done in the project (Part 1 and 2).

Full details of a portfolio's requirements, presentation and assessment can be found in the *'Portfolio and Final Product Requirements and Assessment'* guide on Canvas.

Based on the evidence provided in the portfolio, the following components will be assessed:

- ## Mentor Feedback (10*%)*

The mentor feedback mark will cover the following dimensions of the project:
1. Project management methodology and practices used to deliver the product and artefacts.
2. Client satisfaction with the scope and product delivered, including the product's quality.
3. Progression of learning: technical and non-technical learning achieved based on the mentor's observation.

- ## Teamwork and communication (10%)

Based on the evidence in the portfolio, a mark will be given for sound and effective communication and collaboration with team members, mentor, and client.

- ## Project Planning and Control (10%)

Based on the evidence in the portfolio, a mark will be given for reliable planning and control.

- ## Final Product (25%)

The outcome of the Research and Development Project will be a product or products of some sort (for example, an installed system, a report, or a series of reports on a completed enquiry or a piece of software) that achieves the goals identified by the client. Evidence provided in the portfolio will be used to assess the completeness of all development activities and outputs/products, including the completeness of quality assurance and control activities.

All students **must** maintain a work log or logbook throughout the project. This is a day-by-day record of the number of hours worked and work conducted during that time. The work log must show a consistent work record for the project's duration and maintain a running total of the hours spent on project work. A work log is also a valuable historical tool to track the reasons for design decisions at critical points in your project. Many companies require this for costing purposes, primarily if employees work on several projects simultaneously. The project mentor may ask to see students' work logs and the current project portfolio at any time to ascertain progress, the effort being dedicated to the project, or the degree of individual contribution and activities.

2.11. Final Results

After submitting your portfolio and product, your mentors and moderator will assess all project work. Then, your portfolio, product and reflective reports undergo an additional panel moderation process to ensure consistency across the cohort.

All moderated assessments are approved by the R&D Project teaching team and by the School of Engineering, Computer and Mathematical Sciences Examination Board. Once this process is complete, your marks will be available just as they are for other papers in your BCIS. In

addition, you will receive feedback on all COMP703 (Part 2) assessments on Canvas.

2.12. Summary

This guide has outlined the purpose and processes associated with the BCIS Research and Development Project and identified the assessment requirements and goals. Further details, such as assessment guides on each assessment component, are available on Canvas. If you have additional questions about project requirements, please email the BCIS R&D project paper leader Ramesh Lal (ramesh.lal@aut.ac).

REFERENCES

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Educating the Reflective Practitioner. San Francisco: Jossey Bass.

Appendix A - Team or Individual Student - Client Feedback

Name of Client and organization:

Name of Student/s:

Thank you for acting as a client for this Research and Development Project. Now that the project is nearing completion we would like some feedback that will assist the team or students in their future development. It is important that we gain feedback about the aspects of the work that were done well and also suggestions for improvement. Please comment the team as a whole and where it is possible the individual students.

This feedback will be used by the assessors to complete a picture of the student's performance during the project, and by the students to reflect on their performance during the project and in assessing their future development needs.

Please email the completed feedback to the project supervisor.

THE PROJECT

Could you please comment on the results of the project? To what extent did the student/s achieve the agreed outcomes?

How well did they go about completing this work?

What suggestions do you have for improvement?

How did the student/s contribute added value or provide professional expertise to your organization?

In what ways did the student/s show initiative in learning about the wider aspects of IT professional practice?

PEOPLE SKILLS

In what ways did the student/s adapt to the situation and develop and maintain professional working relationships appropriate to your organization?

In what ways did the student resolve conflicts and manage and deliver to the sponsor's expectations?

OVERALL SKILLS

How did the students' skills and abilities develop during the project?

What advice would you offer this team or each of these students for their professional development?

Signed: Date:

Thank you for taking the time to complete this feedback form