ELEC6200 Group Design Project
Project Management - Briefing
Project description provided by the customer

The project description provided by the customer is brief and will usually include a small amount of detail about the ‘product’ required.

Note there is very likely a high degree of flexibility in approaches that can be used to achieve the ‘product’. The ‘kick-off’ meeting is key– as you should discuss these with the customer/academic supervisor.

Neither the customer nor the academic supervisor is responsible for any aspect of the project planning.
This project supports a feasibility study co-funded by the European Space Agency and executed by the customer (with involvement of UK industry, details under NDA with ECS). The study investigates the use satellite communication for express postal delivery by drones (e.g. medical supplies).

The specific work on the project will require embedded systems development and Internet of Things (IoT) communication in mobile M2M machine-to-machine networks (e.g. between Beagle Bode Black boards). The details of the work will be negotiated with the customer based on the size and skill-set of the team and can be focused more on the embedded side (C++) or more on mobile devices (JAVA/Android link to embedded device). A component of the research is robust performance in the face of limited bandwidth, latency and reliability of the links.
Planning - Week 1 (and before)

• Contact other team members and determine common availability in your timetable – note it may be necessary for a meeting with a customer to take priority over non-academic activities. There should be no direct communication about the project with your customer before the kick-off meeting.

• Attend kick-off meeting, elect project manager, planning meetings (student teams only).

• Become familiar with the Standard Agreement and the University Calendar (regarding intellectual property)

• Complete any ethics or health and safety documentation (for lab work)
Kick-off/First Meeting (scheduled in 1st week)

• It is a good idea for all students to take notes
• The project will be described by the ‘customer’ and the supervisor, usually with objectives.
• It is appropriate to discuss the potential deliverables, but make sure that the customer is the decision maker (not the GDP student members).
• By the end of the meeting make sure that the success criteria and constraints are identified.
• Obtain/request all the required information required - obtain any documentation, equipment etc. from customer
• After the meeting make sure a good set of minutes is created and minutes disseminated to team members quickly.
Project planning meeting(s) (students, a day or so after kick-off meeting)

• An agenda could be produced as there are a lot of objectives required.
• Agree minutes of the kick off meeting with the other student team members - any revisions noted.
• Student Project Manager chosen
• Identify skills set of team members
• Identify any areas where knowledge is lacking - concepts, information that should be researched in patents, publications and other sources.
First Stage Product Design

Key next step
How are you going to achieve the objectives, goals, integration?

What you need to do
• Brainstorming as a team
• Some literature/web/patent searches/discussion(s) with academic supervisor
• Rough schematics are very useful
• For every project there are students allocated with different skills, but also a fair amount of skills overlap. Thus for ‘time-heavy’ tasks it is important to include all the team members in the design process.
• Make sure that you consider the full design, build and test requirements – it is very easy to forget the test stages of each technical goal or how this is to be achieved.
• Create notes and actions during the planning process.
Project planning

• Revisit steps 2-8 - APM methodology
• It is a good idea to take minutes of the discussions of this meeting as it is important to document the specific input of each team member
• Produce a realistic plan for the project, including key milestones, using a network plan and Gantt Chart
• Identify risks, contingencies
• Brainstorm and list tasks, identify milestones.
• Create work breakdown structure
• Team members should identify which tasks they would feel confident doing
• IMPORTANT – make sure that the technical goals are not too over ambitious for the time available – identify stretch objectives stretch objectives
Project Specification/Brief (Deadline 10\textsuperscript{th} Oct)

- 1-2 pages maximum, use template (see Guidelines and Forms on notes pages for template in Word)
- Project description including motivation - Short description of the project including all aspects identified from discussion of first meeting ~ 4 sentences
- Technical Objectives - define these (bullet points are good for this, but make sure they are in sequence)
- Stretch Objectives – define these
- Could include flow chart to describe product integration
- Must include a time plan, such as a Gantt chart showing tasks, milestones and including progress seminars (and preparation)
Project Specification/Brief

• Short description of the project ~ 4 sentences
• Technical Objectives - define these (make sure they are in sequence)
• Stretch Objectives
• Could include flow chart to describe system integration
• Not shown here - a time plan, such as a Gantt chart showing tasks (with team member responsibility shown) and milestones.

Project Specification:

This project aims to investigate the use of satellite communications for express postal delivery by drones, utilising embedded systems development, data compression, code optimisation, and robust project management. As a main focus, to minimise the volume of data transfer between the vehicle and the central station.

Technical Goals:
- Assemble and test two Beyond Line of Sight (BLOS) units
- Design Satellite Communications board to integrate with BLOS
- Implement both M2M Terrestrial and Satellite Communications with BLOS
- Design and Implement a Controller Area Network (CAN) node
- Implement and optimise a compression algorithm to enhance data efficiency

Stretch Objectives:
- Modify Battery Management System for increased power load
- Construct a case for the BLOS units
Project Specification/Brief

- Gantt Chart is best created from Critical Path Analysis
- The Critical Path Analysis Diagram should not be provided with the programme Specification
Risk Management

**Risks:**
- Technical
- Personnel
- External

**Management:**
- Contingency into the schedule
- Effective Technology Transfer/Reporting so that team members can put in some effort into tasks that prove more challenging than originally planned.
Tasks for week 2 (and beforehand)

• Submit Programme Specification/brief document to C-BASS

• Get agreement of the Programme Specification/brief document with the customer.

• Implement changes if necessary, possibly involving a further meeting with the team members to redefine tasks.

• Submit customer agreed version of the specification/brief as soon as possible to C-BASS - no later than the end of the 2\(^{nd}\) week of term.
Progress Monitoring and Data

Weekly progress meetings (some can be with the academic supervisor)
Knowledge Transfer activities between team members

To reduce risk it is a very good idea to properly document progress on a weekly basis
The data should be stored on a ‘private’ repository accessible to all team members.
This was a productive four-hour leadership meeting.

I'd like one of you to type up your notes and send an e-mail to the entire company.

No one took notes?

I didn't have a pen.

Okay, no problem. Does anyone remember what we decided?

We agreed to increase... something.

No, decrease something.

Never mind. Let's try it again on Thursday at 8 a.m.

When is the next leadership meeting?

I should have written that down.
Project Manager Role

• Monitor progress using Scheduling Chart (Gantt Chart)
• Manage schedule - Keep the final ‘product’ objective in mind and if necessary reduce the scale/scope of various tasks, identify whether a new project specification should be created.
• Reallocate team members to support challenging elements of the project or where one or more students is unable to achieve the scheduled workload.
• Communicate with the ‘Customer’ – provide updates, communication of questions.
• Provide a good working environment for the team. Never criticize, praise where good work is achieved and agree weekly actions and check output for robustness of all team members
• Maintain documentation (communication, minutes, reports - these should all go into the appendix data.
• Keep knowledge of the details (this is the most important).
Project Manager Role


1) Leadership
2) Good organisational skills
3) Good motivational skills: Empathy, Understand the positive attributes of each team member, Appreciative and happy to give praise where due
4) Inclusive management
5) Excellent recollection of the detail
Revision of Project Specification

In the rare instance that there are issues with the delivery of some of the objectives it may be necessary to revise the Project Specification

1) Discuss with the academic supervisor
2) Send revised specification to the External Client and obtain agreement
3) Submit revised Project Specification to C-BASS (same C-BASS location as where 1st PS was submitted.)
4) Advise module leader by email.
GDP mistakes

• Insufficient understanding of the customer requirements
• Poor planning
• Overly optimistic objectives given the time limits.
• Poor team working - Lack of inclusiveness of all team members - Team members who are prima donas, a lone wolf, snowflakes - Unequal effort contributions within the team - Undue criticism
• Management - mainly organisation issues or a project manager who is not a Leader.
Formal Progress and Final Presentations

FORMAL PROGRESS SEMINARS (FORMATIVE - WITH FEEDBACK)

1) Progress Seminars 1 (Wednesday 24th October)
2) Progress Seminars 2 (Wednesday 21st November)

15 mins for presentation (all Group Members should speak)
5 mins for questions and change-overs

FINAL MEETING – Wednesday 20th March

3) Final seminars (15 mins presentation, 5 mins questions)
4) Poster presentation (good to have demos, movies to hand on a tablet/laptop)
Slides for Presentations

1) Must be ppt or pdf (embedded movies))
2) Must include GDP number, names of team members, academic supervisor and second examiner, as well as the name of the external client on the first slide.
3) Must not include any information that would disclose and Background or Foreground IP
4) Each team member must contribute an equivalent amount of the speech to the presentation.
5) Must not go over the allotted time (15 mins)

(Note examples of previous presentations can be found in the notes folders (Seminars) - but these include the good, the bad and the ugly!)
THE FINAL PRESENTATIONS AND POSTERS ARE ASSESSED AND FORM A KEY PART OF THE GROUP DESIGN PROJECT ACTIVITY

THIS WILL TAKE PLACE ON THE 20\textsuperscript{TH} OF MARCH 2019 AND WILL BE ATTENDED BY STUDENTS, ACADEMICS AS WELL AS THE EXTERNAL CUSTOMERS.

ALL THE ACTIVITIES FORM PART OF THE ASSESSMENT (A BIT LIKE THE VIVA FOR THE 3\textsuperscript{RD} YEAR PROJECT)
1) Should be constructed as a cohesive talk – not 3, 4 or 5 talks by each of the team members (each person must speak)

2) Be careful not to make the content too expansive (there will be questions for the detail)

3) In your introduction you could consider the content of your network diagram in putting the tasks in the context of the final deliverable(s)

4) Once your presentation is assembled make sure that you are addressing the following - Why? What? How?

5) A good presentation is one that has clarity throughout (remember the project brief example shown earlier)

6) You should be considering the customer as your audience.

7) For questions (5 mins) it can be helpful to have prepared extra slides to illustrate potentially tricky points
POSTERS AND ABSTRACTS

ALL TEAMS MUST SUBMIT A POSTER AND ABSTRACT

The details of these are fully identified on the module notes pages with a link to some examples. Every poster should include the name, group number, supervisor, second examiner and external client name as well as the title of the project. All team members must be at the posters to present them. It can be helpful to have a laptop with a movie or other demonstration tool at the poster.
INDIVIDUAL REFLECTION REPORTS

1) Please see the template on the notes page as this is very specific with respect to the requirements

2) As mentioned it is really important that you take clear notes at every meeting as well as record your work in your lab book as this may be required to substantiate your individual reflection report.

3) At the start of the project some of the potential risks were identified and the management of these were considered – however it is important to include a discussion of all risk management especially all that impacted upon your contribution (by reference to Gantt chart if necessary).

4) Each group member should submit an Individual Reflection Report (13th February)
**GROUP REPORT**

- Each group produce one report *indicating clearly* the individual contribution of all group members.
- Reports should typically be 30 to 60 pages long including diagrams.
- Group reports must be submitted by 31st January.
- Late submission will result in the OVERALL awarded mark being reduced according to Faculty Regulations.
- Teams can decide who prepares/writes the final report, (or the presentation slides and poster). But all team members should check prior to hand-in.
- In addition to a report, all GDP teams should provide an appendix (zip file), First class projects will also have a manual (suitable for the external client to understand) included within the appendix. The typed appendix in the report document should provide a list of the documents, code, diagrams etc. included in the zipped appendix.
ASSESSMENT

- Group report - 75%
  - General guidelines for distribution of group marks:
    - Group contribution – (75% to overall mark for module)
      ✓ Technical aspects - 50%
      ✓ Project management - 25%
    - Individual contribution – 25%
    - Examiners may, at their discretion, modify or set aside the above distribution of marks.

- Group final presentation and group poster – 5%
- Individual reflection report on group work – 5%
- Individual report on Business and Technology – 15%

NOTE: there will be an introductory lecture in the 2nd semester for the Individual report on Business and Technology
Maintaining Confidentiality

THIS IS SOMETHING THAT WILL ULTIMATELY BE REQUIRED DURING YOUR FUTURE CAREER

1) DO NOT DISCLOSE DATA (ON PUBLIC SITES, TO FRIENDS, FAMILY OR OTHER STUDENTS, OR ‘JOE BLOGGS’.

2) PRESENT YOUR WORK IN THE PRESENTATIONS AND POSTERS WITHOUT DISCLOSING BACKGROUND AND FOREGROUND IP

3) REPORTS WHICH CONTAIN FOREGROUND AND/OR BACKGROUND IP SHOULD BE LABELLED CONFIDENTIAL (SEE INSTRUCTIONS FOR GDP FINAL REPORT FORMAT).
Group Design Project

- Aims:
  - to provide an introduction to group project work,
  - to divide task into parts to be pursued concurrently by members,
  - to maintain cohesion as a team while attaining the goal,
  - to exercise self and mutual management skills, particularly the management of time,
  - to gain experience of writing group reports,
  - to gain experience of seminar preparation and oral presentation,
  - to encourage innovation and promotion of innovative ideas.

Any questions?