Software Engineering Group 9

February 23

2011

Project Plan

Signed Off By:

Contents

Project Plan

Project Introduction

Project Outline

The Project that our group has been set is to create a game using software engineering techniques. The game is based around a simulated world populated by two tribes of ants competing against each other for food. The game is won by the ant tribe that has the most amount of food at the end of the simulation. Ants are able to be killed by the opposing ant colony and ants are able to communicate with each other through the use of markers or pheromones. The ants themselves are controlled by ant brains which are programmed and uploaded into the game by the player.

The software engineering techniques that we will be require to use include splitting the group into four subgroups to tackle the four distinct phases of the project, using appropriate analysis and design methods and appropriate programming and quality assurance techniques. The group will be split into four sub-groups; analysis, design, programming and quality assurance.

The analysis team's main task is to produce the requirement specification as well as the analysis model that will be used by the design team to create the designs for the project. The design team is required to transform the analysis model into a design model which can be practically implemented by the programming team. The programming team must generate the code and graphical user interface based upon the design that the design team has created. As the code is created the quality assurance team will be required to rigorously test the program for errors and to test the functionality of the program as well in order for the game to meet the requirement specification and the acceptance criteria.

These groups will respectively tackle each area of the project whilst maintaining high quality communication between each of the subgroups in order to ensure that the project progresses smoothly and with no major problems or delays. Once the project is complete the group will present the final product to the customer in the form of a demonstration of the game functioning.

Project Schedule

During the project there are several major milestones, for each there are several documents which need to be handed over to the customer for the purpose of tracking the progress of the project. The following table shows the deadline for these milestones for both the official deadline and the deadline set within the team itself. The deadlines for the team are set one week before the official hand-in date at a deliverable review meeting in order to allow time for modification should the need arise. More details can be found in the phase plan and project milestones.

Deliverable	***Team Deadline***	***Official Hand-in Date***
Spring Term		
Project plan and group website	Thursday week 6	Thursday week 7
Requirements Specification, Acceptance Criteria and high level design specification	Thursday week 9	Thursday week 10
Summer Term		
Details Design Specification	Tuesday week 2	Tuesday week 3
Source Code, Test Specification, user documentation and peer assessment	Thursday week 7	Thursday week 8
Presentation of the software to the customer	Week 8 details to be confirmed	Week 9 details to be confirmed
Weekly Activity Sheet	Each week after the weekly meeting	

Extra-Deliverables

The following lists defines the extra deliverables that have been negotiated with the customer:

- 3D graphics in game plan
- In game music and sound effects
- Statistics
- Sandbox Development

Conflict Resolution Plan

This conflict resolution plan must be used when conflicts arise within the group.

General Practice:

These stages are to be used in relation to any conflict that arises:

- Stage 1: Attempt to solve the conflict with the person who the conflict has arisen with.
- Stage 2: Fill in the conflict declaration form and submit it to the group manager. If the manager is involved with the conflict then submit the conflict declaration form to an impartial mediator from the group. The manager/mediator will then attempt to solve the conflict, recording the steps taken and solution on the conflict solution form.
- Stage 3: If the conflict cannot be resolved by the manager/mediator, an emergency meeting will be called as soon as possible to which as many of the group as possible must attend. If the conflict is solved by the group, then a conflict solution form must be filled in as stated in stage 2.
- Stage 4: If the conflict cannot be solved by the group, then the group will seek the advice of the Lecturer or a Teaching Assistant to help aid in the conflict resolution.

Code of Practice:

The following is a code of practice that will be undertaken in order to avoid conflicts arising.

- Each group member must document everything that they do towards the project, this is to help prevent disagreements arising between members in regards to who has done what work.
- At each meeting it will be recorded officially recorded in the minutes what each member of the group will be doing before the next meeting, this is to prevent members disagreeing about who is supposed to be doing what work.
- If work is going to be late, let the group know as soon as possible so the group knows the situation and if necessary help can be given in order for the work to be completed as soon as possible see emergency group meeting policy below.
- Major Milestones have been written in the project schedule, sub milestones must be agreed upon in each subgroup. For each sub milestone it must be recorded who is doing what work, when the work is due to be finished by, if it has been finished and if the work has been late. These sub milestones are to be used in order to keep track of progress by the whole group, such that if work is not progressing as quickly as desired help can be given to the subgroup in order to bring the progress up to speed.
- Once the format of each document has been agreed upon, every word processed document must follow the format in order to maintain consistency.
- Try to be helpful and considerate of the other group members, treat everyone with respect at all times.

Emergency Group Meeting Policy:

If any of the following circumstances occur an emergency group meeting must be held:

- Progress is running extremely behind schedule
- Work is consistency completed late
- A group member drops-out
- A group member is unavailable to work either on a short or long term basis e.g. through illness, injury or personal situation/problems.
- Stage 3 is reached in conflict resolution plan

Any emergency meeting that is called must be attended by as many as the group as possible and minutes will be taken of the meeting.

In general an emergency meeting will be called due to either conflict or if a re-distribution of work is required.

In the case of a conflict the group will attempt to mediate the conflict that has arisen and if no agreement can be reached through discussion a vote will be taken in order to solve the problem. If the result of the vote does not solve the conflict then stage 4 of the conflict resolution plan will used.

In the case of the re-distribution of work the group will meet and discuss how the work can be re-distributed. If the work is unable to be re-distributed then in the meeting the group will discuss whether re-negotiating the work to be delivered with the Customer would be possible and if so decide upon what the group would want the outcome of the negotiations with the customer to be, after which the group will approach the customer in an attempt to re-negotiate the work to be completed.

Conflict Solution Form

Names of Involved Parties:

Name of mediator:

Details of Conflict:

Outcome Achieved:

Date of Submission:

Date of Solution:

Conflict Declaration Form

Name of Submitter(s):

Name of Person(s) with who the conflict has arisen:

Name of mediator:

Cause of conflict:

Desired Outcome

Date of Submission:

Date of Solution:

Phase Plan

Project Phases

The phases of the project will have a structure similar to the Waterfall method. The selection of this prescriptive process model was based on the encountering of a "well-defined project requirements" for the AntWorld project. Therefore, there is going to be a sequential approach (One step at time) in the development stage where it start with customer specification of requirements(communication) and advances through planning(estimating, scheduling, tracking), modelling (analysis, design), construction(code, test), deployment(delivery, feedback). In order to avoid the disadvantage of this method, such as lack of feedback and tasks dependencies between the sub-teams, the software house intends to use some techniques commonly known by the Agile methods. Some of these practices includes: the usage of fair amount of face-to-face communication when necessary and collaboration between team members.

Group Website

The software house will create and maintain a website from www.informatics.sussex.ac.uk/users/sb436 which all the *Deliverables* of the AntWorld Project will be able to be accessed. The webpage will contain the name of the group (Group 9-1), software house member names and links to the *Deliverables* that have been submitted. These documents must always contain the name of the *Deliverable* and date it was the link was added.

Note that once the documents have been submitted alterations must NOT occur. However, if modifications after submission were necessary, due to detection of problems in the work submitted, then an addition link to a *new version* of a document is allowed.

The software house website will also contain non-compulsory short video-logs of each group member. These video-logs seek to illustrate an overall and personal viewpoint of how the AntWorld Project is progressing.

Staff allocated to complete the task :

Stephen Baston(Quality Assurance Team) has been assigned as creator and responsible for the maintenance(additions and updates of links to deliverables)of the group website.

Schedule completion – Spring - Week 5/Thursday

Project Plan

The *Project Plan* will present a detailed overview of the Antworld Project as for the customer assessment. Once the team representatives and customers have assembled together and agreed on the project requirements this document will be written-off by the Analysis Team.

However, **note** that each sub-team should compose their part in the *Phase Plan* and *Organisation Plan* so that the Analysis Team can gather it together in the final version of this document.

Analysis Team should start this document in week 4, and it should NOT take any longer than two weeks to be completed.

Staff allocated to complete the task – Sean Chapman and Barbara Franca
Schedule completion – Spring - Week 6/Thursday

Project Introduction, Conflict Resolution Plan, Phase Plan, Organisation Plan are the contents of the *Project Plan* that are explained below:

Project Introduction

- *Project Outline* – This section should give a brief description of what tasks the software house should perform in order to obtain a successful approach to the Antworld Project agreed in the customer requirements meeting.
  Staff allocated perform the task - Sean Chapman
  Schedule completion – Spring - Week 6/Thursday

- *Project Schedule* – In a few paragraphs long the project milestones and its scheduled deadline will be concisely illustrated in this session.
  Staff allocated to complete the task – Sean Chapman
  Scheduled completion – Spring - Week 5/Thursday

Conflict Resolution Plan

During the period of construction of the project a number of matters might be arisen. In this part, thought ahead disruptive events will be allocated along with their respective solution plan. **Note** that this document should be rich in details.

Staff allocated to complete the task – Sean Chapman
Schedule completion – Spring - Week 5/Thursday

Phase Plan

Each sub-team in the project Antworld should produce their own part in this section.

- *Project phases* – Detailed allocation of project milestones and staff task duties in Analysis Team.
  Staff allocated to complete the task – Barbara Franca
  Schedule completion – Spring - Week 6/Tuesday

- *Project Milestones* - This section should contain the PERT network for each project milestones allocated in the phase plan. The PERT NETWORK should include the expected time for each task, and the critical path.
  Staff allocated to complete the task – Barbara Franca and Sean Chapman
  Schedule completion – Spring - Week 6/Tuesday

Organisation Plan

Descriptions of duties that the project staff and teams have responsibilities of. Each of sub-group should produce their own part in the *Organisation Plan* and the Analysis team should put it all together in the final document.

Staff allocated to complete the task – Barbara Franca
Schedule completion – Spring - Week 6/Tuesday

- *Individual Responsibilities*
- *Project Manager Responsibilities*
- *Analysis Team Responsibilities*
- *Design Team Responsibilities*
- *Quality Assurance Team Responsibilities*

Peer Assessment Plan

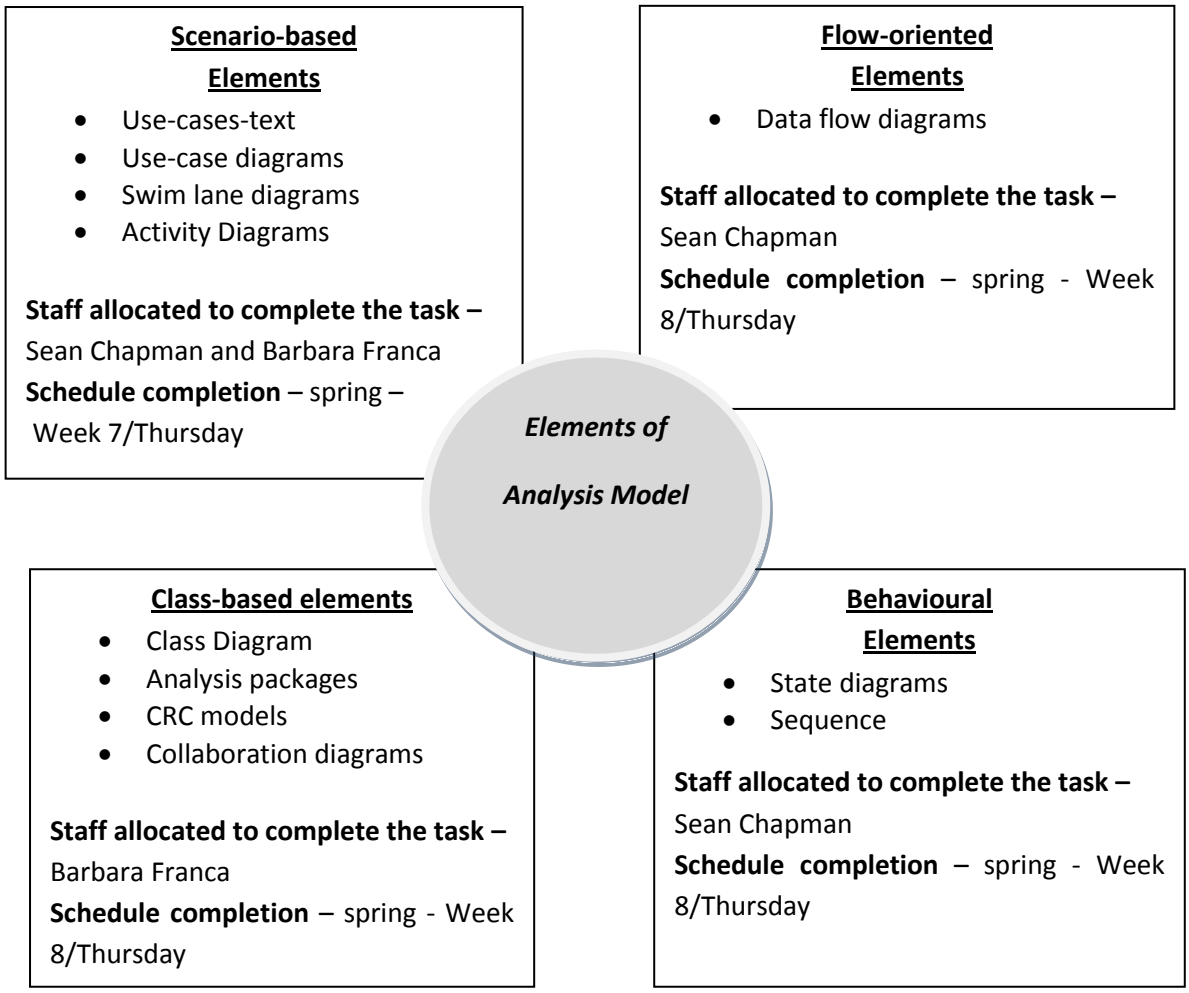
In this session the group will discuss plans to evaluate the performances of the group members. The Analysis team should be responsible for producing the agreed Peer Assessment Policy.

Staff allocated to complete the task – Barbara Franca & Sean Chapman
Schedule completion – Spring - Week 6/Thursday

Analysis Team Phase Plan - Requirements Specification

The Requirements Specification includes the analysis and breakdown of customer's problem. In this part the Analysis team is responsible for the functional properties and the Quality Assurance team for the Acceptance Criteria of the software.

- Intro
- Analysis Model – The analysis model will illustrated the desired behaviour of the system represented by a collection of scenarios. These scenarios will be described using a number of elements in UML notation.
  Elements of the analysis model and staff allocation:



The user documentation

This document will be the last to be accomplished in the project. Once the game have been completed and tested the Analysis team shall come together with the other sub-teams and gather the information necessary to make this document.

- *Installation guide* - An *installation guide* will be written for the system administrator.
  Staff allocated to complete the task – Sean Chapman
  Schedule completion – summer - Week 7/Thursday

- *User Manual* – The *user manual* shall describe the functionality of the system and user interface. This documentation is aimed at the user of the program.
  Staff allocated to complete the task – Barbara Franca
  Schedule completion – summer - Week 7/Thursday

Design Team Phase Plan

Specification Analysis

Within this step the Design Team will analyse the specification given to them by the Analysis Team and will begin translating this into something the Programming Team can use as a basis for the program. There will be no physical output from this phase aside from notes on the specification, these will not need to be handed in but they will have to be taken into account in subsequent phases
Staff Allocated: Aaron Grover & Devendra Magar
Schedule Completion: 21/02/11

High Level Design Specification

This stage will focus on the creation of the High Level Design Specification which consists of an introduction, a description of the architectural design and a requirements cross reference section, as well as a common tactical policies section.
Staff Allocated: Aaron Grover & Devendra Magar
Schedule Completion: 14/03/11

2.1 Introduction

The introduction will be reasonably simple; it will give a brief overview of the Architectural Design (see phase 2.2 for details) and a general run down of what the High Level Design Specification deliverable will consist of.
Staff Allocated: Aaron Grover
Schedule Completion: 25/02/11

2.2 Architectural Design

The architectural design shall consist of object and class diagrams in UML notation, describing how each element of the analysis model is to be structured. Classes will be grouped into categories reflecting the logical organisation of the system, and into subsystems reflecting the physical organisation of the system. Possibilities for concurrency should be identified.
Staff Allocated: Aaron Grover & Devendra Magar
Schedule Completion: 05/03/11

2.3 Common Tactical Policies

Within this section, localised mechanisms which appear throughout the system will be identified and policies for handling them will be developed and subsequently noted. The physical output of this section will be noted policies on handling such localised mechanisms.

Staff Allocated: Aaron Grover

Schedule Completion: 10/03/11

2.4 Requirements Cross Reference

This section will be used to give the relationship between the analysis model and the architectural design. One to one collation between the Analysis Model and the Architectural Design will be noted and will be given the same name. When there is not a one-to-one collation, a requirements cross-reference table will be given in order to clarify any uncertainties.

Staff Allocated: Devendra Magar

Schedule Completion: 14/03/11

Detailed Design Specification

As stated in the Design Team Organisational Plan, the Design Team will need to produce a Detailed Design Specification which is a more refined version of the High Level Design Specification (class and object diagrams in UML notation, full information about the objects of the system are to be represented with identified opportunities for exploiting inheritance). The detailed design specification will be the main document that is passed on to the programming team who will use it as a basis for implementation.

Staff Allocated: Aaron Grover & Devendra Magar

Schedule Completion: 23/05/11

3.1 Introduction

Similar to the introduction in phase 2.1, this section will simply give a brief overview of the Detailed Design Specification and explaining what this deliverable will consist of.

Staff Allocated: Aaron Grover & Devendra Magar

Schedule Completion: 25/03/11

3.2 Detailed Design Specification

The detailed design of the system shall be described using object and class diagrams in UML notation. How object state information is to be implemented will also be specified. We will aim for the Detailed Design Specification to be directly linked to the High Level Design Specification, and any divergences from such an aim will be noted, clarified, and justified. We will also need to aim for this to be easily interpreted by the Programming Team to ease the transition from UML to code, allowing quick and efficient implementation.

Staff Allocated: Aaron Grover & Devendra Magar

Schedule Completion: 20/04/11

Continued Corroboration with Programming Team

If the need arises, the Programming Team will be given the ability to put down demands on the Design of the System, and can therefore influence the work of the Design Team; such a need would be something along the lines of misinterpretation of data, or any incapability of the Programming Team in terms of implementation of the system. This phase will be continuous until the hand in dates for both the High Level Design Specification and the Detailed Design Specification deliverables.

Staff Allocated: Aaron Grover & Devendra Magar

Schedule Completion: Project Completion

Programming Team Phase Plan

The programming part of the assignment is a very extensive and contains numerous components and sections. Many things can go wrong where you least expect them. Having phases will allow us to focus on sub tasks than to the project as a whole and hence allow us to work one step at a time towards our goal.. In these phases, there is a learning subtask as well, since we are not experts, we are going to need some time researching about the particular subtask (if needed). The programming will of course follow the design provided by the design team , unless we spot errors, where in that situation, we use the diversity of the agile methods and re-design some parts.

Phase 1: Creating the parser for world and ant syntax analysis to make sure that the syntax is well formed.

1.1: looking at notes, understanding methods, and how they interact with each other.

1.2: creating the parsers.

Estimated time to finish: 2 weeks.

Phase 2*: **Create game logic.***

2.1 Look at all methods and understand how they work

2.2 Create the geometry of the hexagonal grids which the world is based upon.

2.3 Create the biology of Ants: A class of ants with fields and suitable initializations.

2.4 Create the geography of the world: The types of objects we can have in a hexagonal grid, and functions concerning how to return certain information about them.

2.5 Create the cartography of the world. Creating of random worlds which the competition will take place in. These have a specific format.

2.6 Chemistry: Introduce Markers to the world/ants. This includes both the sensing of a nearby marker by an ant but also adding markers to the world, 6 types of them.

2.7 Create the Phenomenology section: A series of ant methods that will allow it to perform a certain behaviour or strategy as to how to collect food, or kill other ants.

2.8 Create the Neurology Section: Create all the instructions of the ant as a series of states in an array.

2.9 Create the Neuro -cartography section: Map all the instructions that the ant can take in a file of a special format so that it can be uploaded for competing.

2.10 Create the Martial Arts section: Create the methods for allowing ants to kill other ants, and methods for dying if specific conditions are set, turning to food.

2.11 Create the number theory: implement a pseudo random number generator, to be incorporated in the flip() instruction.

2.12 Create kinetics: implementation of calling a command on an ant to changing both its state (if its alive) , but also the world's state.

Estimated Finish time: 5 weeks

Phase 3: *Creating 3d graphics:*

3.1: learning how 3d graphics work in java.

3.2 finding/creating the graphics images we are going to use.

3.3 create graphics engine

3.4 tidy code, error handling.

Estimated time to finish: 4 weeks.

Phase 4: *2 Player Implementation*
Estimated finish time: 1 week

Phase 5*: Stats counting*
Estimated Finish time: 1 week

Phase 6: *Tournament Implementation*
Estimated Finish time: 1 week

Phase 7: *Music*
Estimated Finish time: 1 week.

Bottom note: we have discussed together about the brain proof of concept part, and we came to an agreement that the whole team will participate to do that , as more ideas, would be very welcome, to allow us to get closer to victory.

Quality Assurance Team Phase Plan
Here are the expected project milestones for the QA team. These milestones will be based around what the programming team are working on throughout the project. This is because we decided that it would be more convenient and plausible if tests were created and carried out after each major change in the software. We decided against using test driven development for the project since as a group, we have more experience in writing code first and then doing tests afterwards rather than the programming team writing the code based on the tests created by the QA team.

- Spring Term Week 6 – **First deliverable due – Thursday 17th Feb.** Have QA section of the phase plan and organisation plan finished.
- Spring Term Week 8 – Read through notes about JUnit 4.0 and set up a test suite to accommodate all unit tests. Read up on processing in Java.
- Spring Term Week 9 – **Second deliverable due – Thursday 10th March.** Have the Acceptance criteria written up.
- Easter Holiday – Continuous testing of the programmer's code over the 6 weeks and reporting back on the results from the tests.
- Summer Term Week 7 – **Third deliverable – Thursday 16th June.** Have the test specification finished and written up. This will be
- Summer Term Week 8 – **Presentation.** Have the QA section of the presentation done ready for the presentation given in week 9.

For each of these milestones, there will be a set series of phases that will have to be traversed in order to fulfil that milestone's target. This is because the testing will be ongoing and the same procedure is going to have to be implemented every time new tests are required for new code production. These phases are as follows:

- Scope
- Test plan
- Test procedures
- Test results

Pert Charts and Milestones

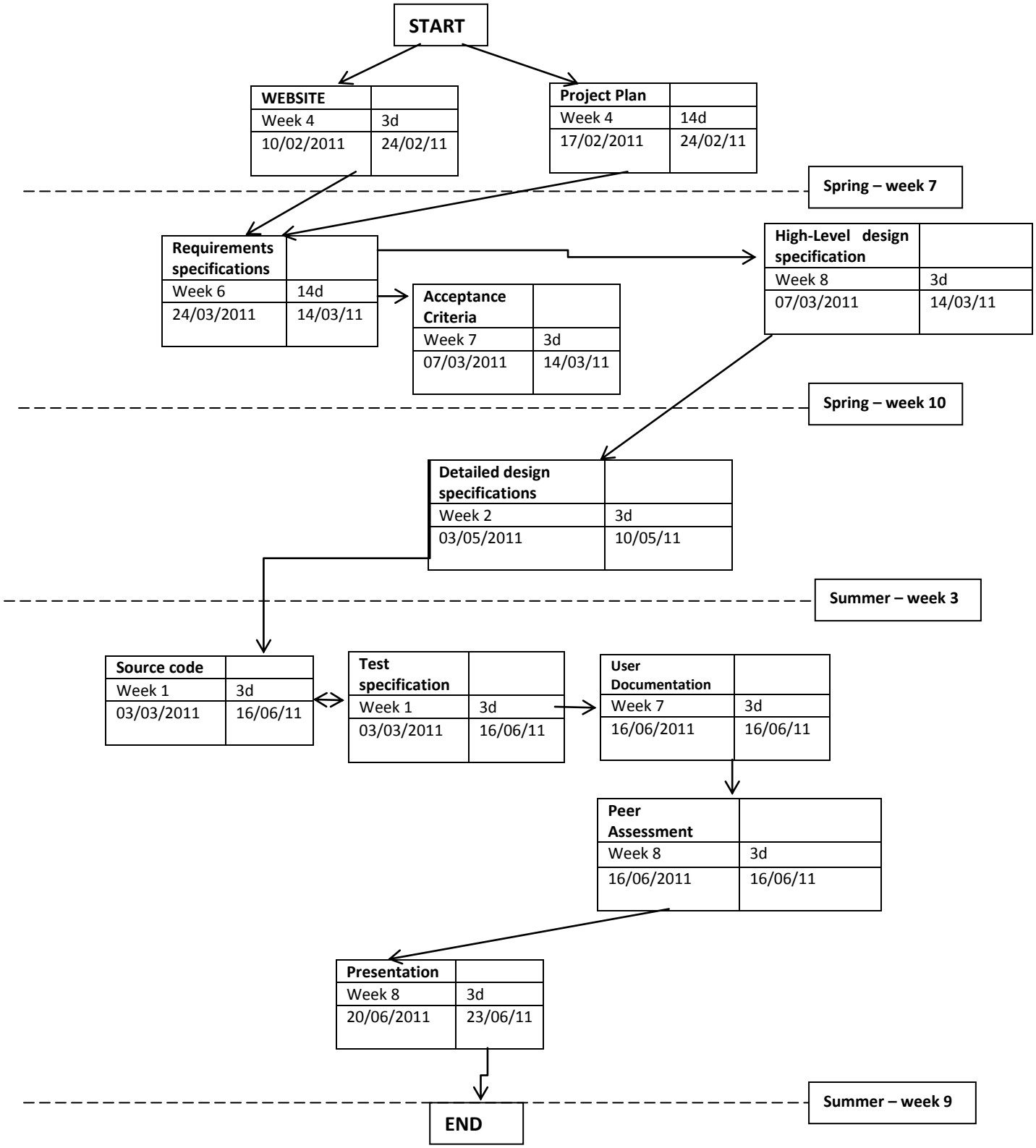
General Pert Chart

PERT CHART

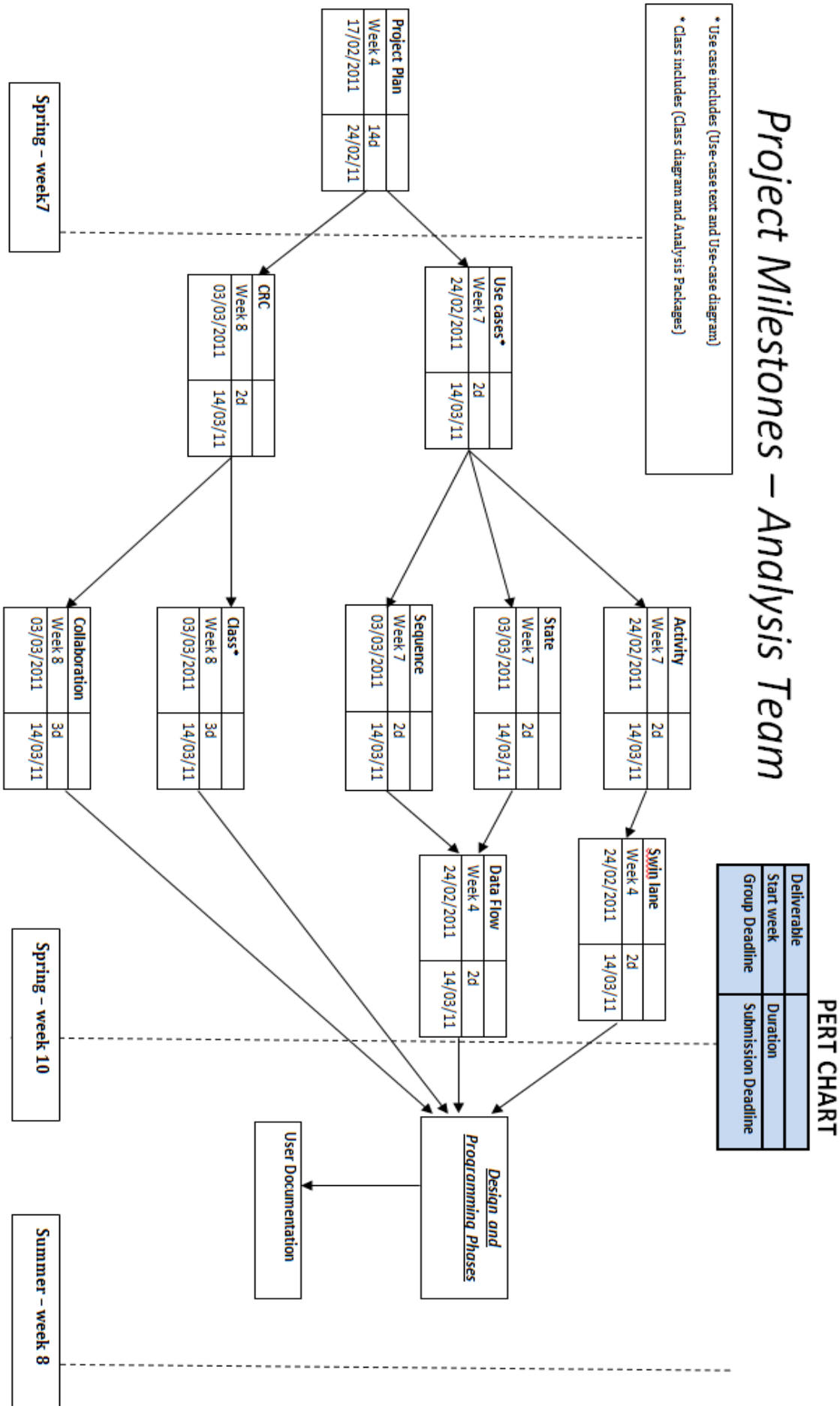
Deliverable	
Start week	Duration
Group Deadline	Submission Deadline

Project milestones – Group 9

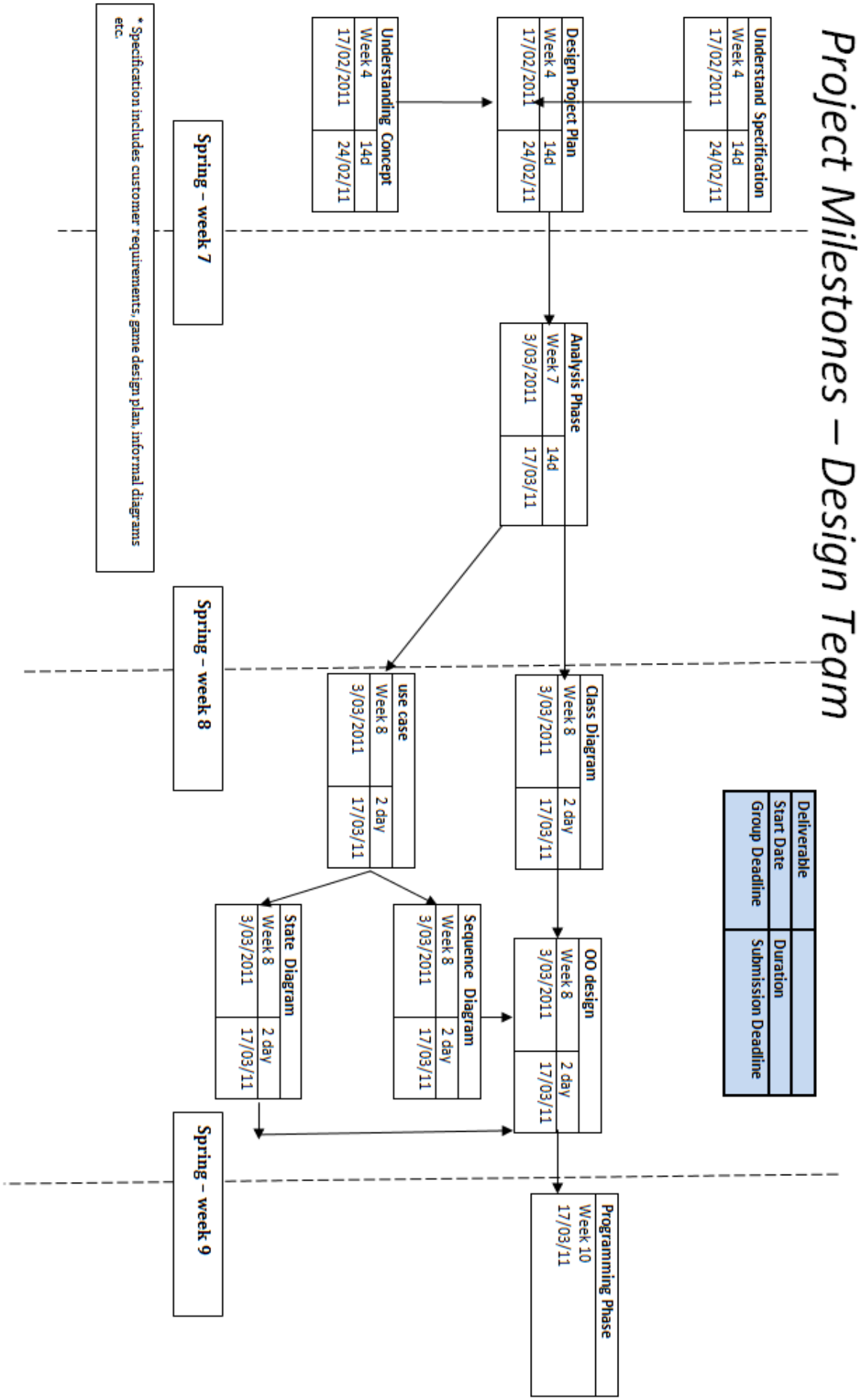
DELIVERABLES



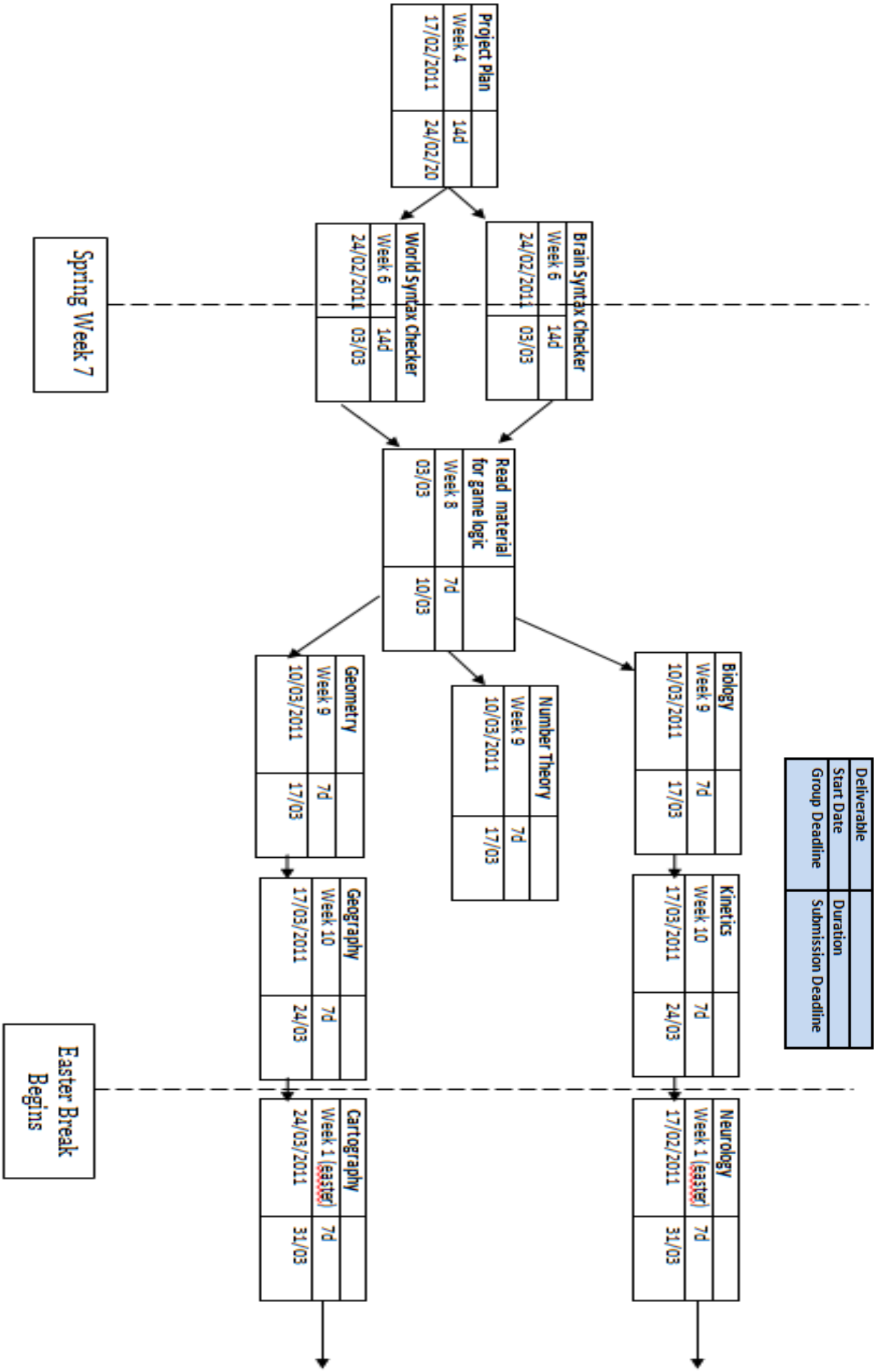
Analysis Team Pert Chart and Milestones

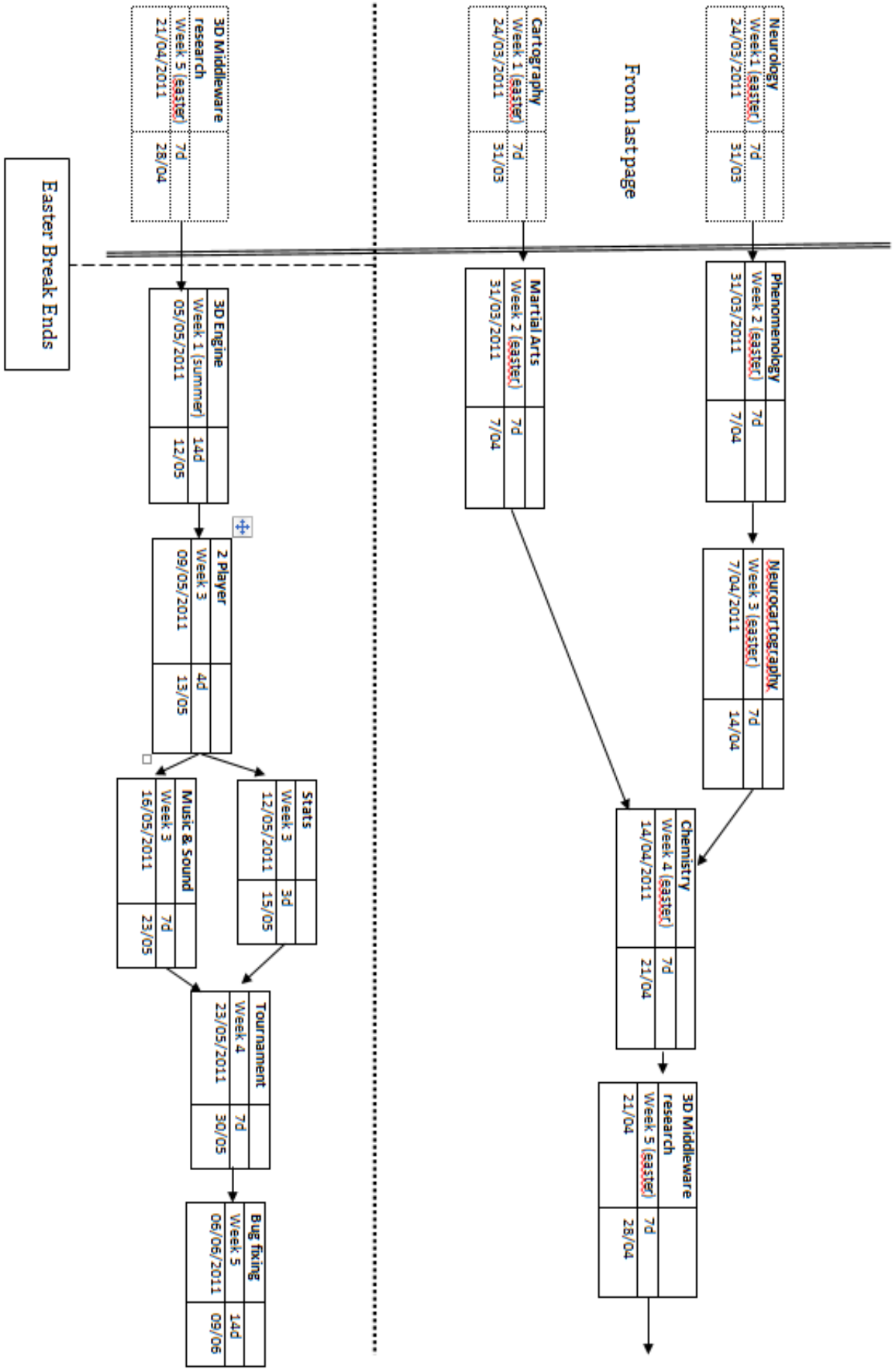


Design Team Pert Chart and Milestones

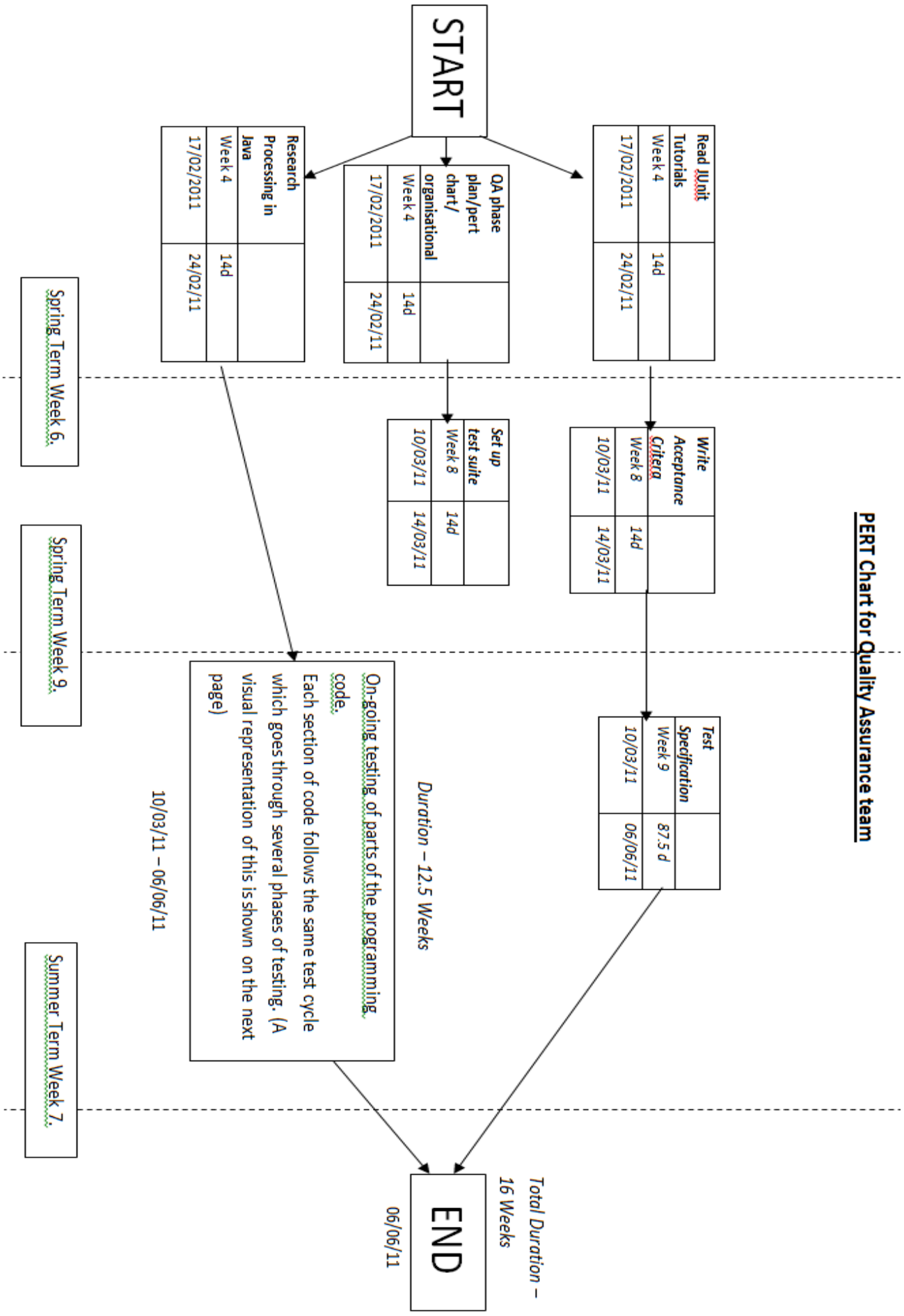


Programming Team Pert Chart and Milestones




Neurology
Week 1 (easter)
24/03/2011
7d
31/03
Cartography
Week 1 (easter)
24/03/2011
7d
31/03
3D Middleware research
Week 5 (easter)
21/04/2011
7d
28/04
From last page
Easter Break Ends
Phenomenology
Week 2 (easter)
31/03/2011
7d
7/04
Martial Arts
Week 2 (easter)
31/03/2011
7d
7/04
3D Engine
Week 1 (summer)
05/05/2011
14d
12/05
Neurocartography
Week 3 (easter)
7/04/2011
7d
14/04
2 Player
Week 3
09/05/2011
4d
13/05
Chemistry
Week 4 (easter)
14/04/2011
7d
21/04
3D Middleware research
Week 5 (easter)
21/04
7d
28/04
Stats
Week 3
12/05/2011
3d
15/05
Music & Sound
Week 3
16/05/2011
7d
23/05
Tournament
Week 4
23/05/2011
7d
30/05
Bug fixing
Week 5
06/06/2011
14d
09/06

Quality Assurance Team Pert Chart and Milestones



Organisational Plan

Staff Organisation

The team will accommodate a *Controlled Decentralized* structure. Therefore, there will exist a defined leader who coordinates activities, nevertheless problem solving will be part of group activity. The teams will communicate in parallel and be able to have straight contact with project manager. This staff organisation will allow the team to be motivated to work in groups and stimulate creativity amongst the members.

The Software House will be divided into four sub-groups:

- **Analysis Team**
  Team members: Barbara Franca
  Sean Chapman
- **Design Team**
  Team members: Devendra Magar
  Aaron Grover
- **Programming Team**
  Team members: Ewen Cluley
  Martinos Evripidou
- **Quality Assurance Team**
  Team members: Jonathan Herbst
  Stephen Baston
  Rajbir Bal*
- **Other roles**:**
  Project Manager
  Group Representatives
  Mediator
  Recorder

* Rajbir has contacted the group once but has not attended any meetings as of this date. If he begins to participate in the project he will be assigned tasks in the Quality Assurance team.

** Other roles described below

Other roles:

Project Manager: Jonathan Herbst
Chair: Jonathan Herbst

As project manager, there are many responsibilities that must be fulfilled in this role such as:

- Being a point of contact for everyone in the group if they have any problems or queries about the project or general issues.
- Oversee the general running of the project.
- Making sure communication is running well within the team and individual project teams.
- Keeping the project group informed about any updates or changes that will affect the group members.
- Writing the agenda for each of the meetings
- Being the main person to talk to the customer about any issues such as a change in the customer requirements due to given reasons.
- Constantly communicate with all team members to make sure members are getting on okay and to keep morale at a good level.
- Delegate work at times where needs be.
- Making sure that all work is completed on time and that if anyone is running behind, to let the project manager know so that the problem can be resolved.

In addition to this, there are also a few responsibilities as Chair which must be carried out as well such as:

- Make sure the production of the deliverables is all okay and is running smoothly
- Arranging the times, dates and locations of the meetings
- Managing the meetings and making sure all of the subjects on the agenda are discussed
- Asking each team member at the weekly meeting what work they have done over the last week and filling out the weekly activity sheets to show what each team member has done that week.

Naturally, these two positions will cross over from time to time like when it come to the agendas and weekly activity sheets but the project manager will have the final say/decision when it comes to group decisions.

Mediator: Aaron Grover
If a conflict arises and there was no clear solutions from the parts concerned and if the project manager is unable or is involved in the situation, the mediator shall attempt to solve the problem before the team takes a further step.

Representative: Analysis team

Represents the team to customer and to the other teams, to the customer, and to the review manager. They should, also, ensure that deliverables are sent to the customer on time.

Recorder: Sean Chapman
Take minutes in team meetings and review meetings and circulates the minutes so that the whole group can access it.

The software house will be using the version control (SVN) as for file space. This was agreed upon the advantages of this software, such as:

- Atomic commits
- The file Rename/Move/Copy actions preserve the revision history
- The directories are versioned

- Native support for binary files
- Optimized repository access
- File properties and MIME types
- Multiple repository access protocols including HTTP and HTTPS
- Svn webpage: www.informatics.sussex.ac.uk/svn/se-2011-group9/

Document outline:

Every document checkout should be in the following format: *document-name dd/mm/yyyy*

- **Analysis Team Responsibilities**

  The analysts will be responsible for the requirement analysis of the AntWorld project. Thus they shall build a variety of models that illustrate the functional activities, user scenarios, system and class behaviour, classes and their relationships, and the flow of data elements. Whilst the analysis models are being constructed, the representative of the design team will be present in selected meetings so that they can collaborate with the analysis team. This will be done in order to maintain understanding of the analysis models to aid in the construction of the *high level design*. The analysts should take the same approach and collaborate with the Designers in initial stages of their project phases.

  Individual responsibilities:

  - **Team Representative (Sean Chapman)**: Representing the team to customer and to the other teams, to the customer, and to the review manager. It should, also, ensure that deliverables are sent to the customer on time.

  - **Team Chair (Barbara Franca):** Overseeing the production of the deliverables and arranging/ chairing team meetings and review meetings.

  - **Recorder (Barbara Franca):** Recording the meetings and adding it to the control version (svn) so that it accessible to other member of the project.

  Project phases and individuals responsibilities:

  - Project Plan – **Sean Chapman & Barbara Franca**
  - Requirement Specifications - **Sean Chapman & Barbara Franca**
  - User Documentation - **Sean Chapman & Barbara Franca**

    In each phase each member shall be responsible for completion of their own allocated subtasks, making sure that the deadlines are met and the work is organized. It is important that the team communicate in between meetings so that there exists clear understanding of the job to be carried out.

*A more detailed description of the project phases sub-tasks and staff allocation is given in the Analysis *Phases Plan.*

- **Design Team Responsibilities**

  The design team will be responsible for the interpretation of the specification, given by the customer to the Analysis Team, into a format which can be utilised by the Programming Team. As such the Design Team will need to produce a High Level Design Specification which, in brief, specifies the overall structure of how the analysis model is to be implemented. This document is the first step of translating the requirements specification into an executable form. The High Level Design Specification will be ordered into an

introduction (which gives an overview of the architectural design), a description of the architectural design (which will consist of object and class diagrams in UML notation, describing how each element of the analysis model is to be structured in the implementation stage) and a requirements cross reference section (which will be used to illustrate the relationship between the analysis model and the architectural design).

The design team will also need to produce a detailed design specification, which is a more refined version of the High Level Design Specification (including class and object diagrams in UML notation, giving full information about the objects of the system are to be represented with identified opportunities for exploiting inheritance also listed. The detailed design specification will be the main document that is passed on to the programming team who will use it as a basis for implementation.

Individual responsibilities:

- **Team Representative (Devendra Magar, Aaron Grover)**: Representing the team to customer and to the other teams, to the customer, and to the review manager. It should, also, ensure that deliverables are sent to the customer on time.

- **Team Chair (Aaron Grover):** Overseeing the production of the deliverables and arranging/ chairing team meetings and review meetings.

Project phases and individuals responsibilities:

- Specification Analysis - **Aaron Grover & Devendra Magar**
- High Level Design Specification - **Aaron Grover & Devendra Magar**
- Detailed Design Specification - **Aaron Grover & Devendra Magar**
- Continued Corroboration with Programming and Analysis Teams - **Aaron Grover & Devendra Magar**

*A more detailed description of the project phases sub-tasks and staff allocation is given in the Design *Phase Plan.*

- **Programming Team Responsibilities**

The programmers will have to program the code to create the ant world, consisting of elements like markers, rocks, food, anthills, ants, and the ant brain which will consist of all the methods and interactions with the world for the game to work correctly. Along with our game, we have committed in making 3d graphics with the game, as well as cross platform testing. Also, we have to design a parser to make sure that the world and the ant brain syntax are correct, and finally make a program to match two opponents together, in a tournament like fashion. Once the game between two players has been finished, it will determine the winner of the game. Finally we will add music & sound effects as an extension to the game to make it more interesting and immersive. In programming the game, the programmers have to take the design provided by the design team, and transform it into coding. Although we are working with waterfall methodology, if we find any errors, or hard implementations of the design, we are going to use a fairly agile way of working such that the design can change and be improved from feedback from our experiences, allowing us to proceeding with the coding from an early stage and tweak design as we go on. The programming team will be working very closely with the QA team, so that whenever each module of the whole program is finishing, they can test it, and assure that it is well written and correct.

Individual responsibilities:

- Team Representative: **Ewen Cluely**

Project phases and individuals responsibilities:

- Reading and understanding 3d engine creation and methods: **Martinos Evripidou & Ewen Cluely**
- Brain Syntax parser: **Ewen Cluely**
- World Syntax Parser: **Martinos Evripidou**
- Geometry: **Martinos Evripidou**
- Geography: **Martinos Evripidou**
- Cartography: **Martinos Evripidou**
- Martial Arts: **Martinos Evripidou**
- Neurology: **Ewen Cluely**
- Number Theory: **Martinos Evripidou**
- Chemistry: **Ewen Cluely & Martinos Evripidou**
- Biology of Ant: **Ewen Cluely**
- Phenomenology of Ant: **Ewen Cluely**
- Kinetics: **Ewen Cluely**
- NeuroCartography: **Ewen Cluely**
- 3d Engine**: Ewen Cluely & Martinos Evripidou**
- Implementation of 2 Players**: Ewen Cluely & Martinos Evripidou**
- Stat recording: **Ewen Cluely & Martinos Evripidou**
- Music Implementation: **Ewen Cluely & Martinos Evripidou**
- Tournament: **Ewen Cluely & Martinos Evripidou**

*A more detailed description of the project phases sub-tasks and staff allocation is given in the Programming *Phases Plan.*

- **Quality Assurance Team Responsibilities**

  Throughout the project there will be testing of the code and the functionality of the program. Before this is possible a few things must be completed first. The first couple of weeks will be spent learning about JUnit testing by using tutorials and a test suite must also bet set up in the first couple of weeks to accommodate the testing following. The project will be using processing in java, so a good knowledge of this must also be acquired in the early weeks. Also before testing the QA team must complete an acceptance criteria for the project outlining the musts and must not's for the program.

  Once the test suite is complete and all members of the QA team are confident with their knowledge of processing in java and of course JUnit testing we will be moving into the next stage, the physical tests. Following each section of the programming there will be a testing stage to make sure it meets the acceptance criteria and to make sure the program is fully functional according to the specification. These testing stages will be composed of looking at the overall scope of the code, applying tests according to the test procedures, and gathering results which will be fed back to the programming team.

  For the testing to work efficiently there must be a good flow of communication between the programming team and the QA team. The deadlines must be met and the results must be promptly sent to the appropriate members for both teams to keep on track. To help make sure work is completed promptly members of the team will be set milestones daily, staggering the workload into achievable tasks. The two members of the QA team will need to use pair programming in order to keep consistency within the testing methods. This means that they must work alongside each other and keep each other up-to-date to prevent deviation within the testing results and methods.

This working relationship between the programming team and the QA team is vital to the testing procedures. The two teams will be working alongside one another and at times with each other to achieve the required functionality. For example once the programming team have completed a certain section of the code it must be passed immediately to the QA team so that they can look at the scope of the code and give feedback and again with regards to the test results and the progress shown by the results.

Individual Responsibilities:

- Team Representative (**Stephen Baston**): Representing the team to customer and to the other teams, to the customer, and to the review manager. It should, also, ensure that deliverables are sent to the customer on time.

- Team Chair (**Jonathan Herbst**): Overseeing the production of the deliverables and arranging/ chairing team meetings and review meetings.
- Recorder (**Jonathan Herbst**): Recording the meetings and adding it to the control version (svn) so that it accessible to other member of the project.

Project Phases and individual roles:

- Share of project plan - **Stephen Baston and Jonathan Herbst**
- Acceptance criteria - **Stephen Baston and Jonathan Herbst**
- Test specification - **Stephen Baston and Jonathan Herbst**

In each phase each member shall be responsible for completion of their own allocated subtasks, making sure that the deadlines are met and the work is organized. It is important that the team communicate in between meetings so that there exists clear understanding of the job to be carried out.

Peer Assessment Plan

Each subgroup is assigned 22.5 points to split between the members of the subgroup, this leaves 10 points to be assigned during a group meeting in the summer term. The allocation of these points will be done on a ratio basis; the ratio will be worked out according to the following rules:

Attendance:

- If a member turns up to a group meeting or is unable to attend a group meeting but informs the group and the reason is acceptable that member gets assigned 1 mark.
- If a member does not attend a meeting and does not inform the group or the reason for not attending is not acceptable then they gain no marks.

Work submission:

- If a member hands in a piece of work that member gets assigned 2 marks
- If a member hands in a piece of work on time that member gets assigned 1 mark
- If a member hands in a piece of work late that member gets subtracted 1 mark

Helping other Groups:

- If a member from another subgroup helps marks are assigned as follows:
    - Partial help with work gets 1 mark assigned
    - Completing an entire piece or work/document gets 2 marks assigned

Table Showing Temporary Marks Given

	Attendance/ Authorised Absence	Non-Attendance/ Unauthorised Absence	Work Accomplished	Group Deadline Met	Group deadline not met	Partial help Given	Full Help Given
Temporary Marks Awarded	1	0	2	1	-1	1	2

It is up to each subgroup to keep track of work completed/handed in late, attendance to meetings is recorded in the minutes and marks will be assigned from the attendance recorded.

Under normal circumstances (e.g. no member has dropped out) and work is submitted up to 1 day after the university submission deadline each member of the group whose work is late is subtracted 3 marks from their peer assessment points, if it submitted after 1 day and up to a week late 6 peer assessment points are subtracted from their overall marks. These marks are then evenly allocated amongst the other members of the group project.

Under exceptional circumstances (e.g. a severe unexpected illness amongst the group) an emergency meeting will be held as per the ***conflict resolution plan*** to discuss reallocation of work/marks***.***

Under Normal Circumstances - Table Showing Peer Assessment Points Amendments

	Work Submitted up to 1 Day late	Work Submitted up to 1 week late	
Peer Assessment Points amendments	-3 (from each member of the subgroup)	-6 (from each member of the subgroup)	Points deducted are re-distributed to the other groups

The final 10 marks for peer assessment will be assigned during a group meeting in the summer term where each group member will put across an argument as to why they should be given a portion of the remaining 10 points; this will be decided by a group vote.

An example of Temporary Mark / Peer Assessment Points calculation is below:

Analysis Team Example:

Subgroup: Member	Attendance	Work Accomplished	Group Deadline Met	Group Deadline not Met	Help Given	Total Marks
Analysis team: A	7	6	2	-1	N/A	14
Analysis team: B	7	6	3	0	N/A	16
Design team: C	N/A	N/A	N/A	N/A	1	1

Total Points for Analysis Team: 31

22.5/31 = 0.725

A team A total mark = 0.725 * 14 = 10.15 points given in peer assessment
A team B total mark = 0.725 * 16 = 11.6 points given in peer assessment
D team C total mark = 0.725 * 1 = 0.75 points given in peer assessment

In this example member C was from another sub-group and given 0.75 peer assessment points from the analysis group to add to their overall peer assessment points.

An example of final 10 points allocation:

Analysis team member A bidding for 4 out of the 10 points available.
Reason: was the group manager, who created agenda's and minutes and was integral to maintaining communication between the sub-groups.

If group agrees then 4 points are added to the total peer assessment points giving 14.15 as the **final** peer assessment point allocation for member A of the analysis team.

Peer Assessment Tracker Form

This is a peer-assessment tracker form, this should be updated after every meeting, work hand in and when help is given to other groups.

Group Members Name:

Sub-Group:

																										Total
Group Meetings Attended																										
Work Handed In																										
Work Handed in on Time																										
Work Handed in Late																										

Sub-Group Helped	**Partial Help Given**	**Full Help**	**Sub-Group Chair Signature**