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HANTS & DORSET AMATEUR ROWING ASSOCIATION

EVENT ORGANISER

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Abstract

The Hants and Dorset Amateur Rowing Association is an organization that was founded in 1903, since that date they have held their prestigious South Coast Championship Regatta every three years. The next South Coast Championship Regatta is set to take place on September 8th 2007 and will be held at Dorney Lake, which is also the chosen venue for the 2012 Olympic Regatta.

The South Coast Championship Regatta is a very popular event which is attended by hundreds of athletes from around the Country. Up until now the regatta has been organized and ran via a paper based system, which results in hundreds of files of information having to be collected over the regatta period.

This project aims to create a new system using modern day technologies that will significantly improve the existing processes as well as take the reader through the specific stages used to design and produce it.

Acknowledgements

The developer would like to thank the Hants and Dorset Amateur Rowing Association in particular Mr. Mike Green who supported the project from its conception.

Thank you also to both the first and second supervisors, Stephen McKearney and Peter Jemmeson for their consistent and inspiring advice throughout the development.

Finally a special thanks to the members of the Dream Team including Chris for their continued support.

1. Introduction

1.1 The Hants & Dorset Amateur Rowing Association

Since 1893 all coastal rowing across the United Kingdom has been administered by the Coast Amateur Rowing Association (CARA). However in 1903 due to increased popularity in the sport it was agreed that the Coast Amateur Rowing Association was to split into three affiliated associations. These were the Coast Amateur Rowing Association (CARA), the Hants and Dorset Amateur Rowing Association (HDARA) and the West of England Amateur Rowing Association (WEARA). Each of these affiliated association have been running their own coastal rowing seasons since this time, which consists of fifteen regattas. At each of these regattas hundreds of athletes compete in different events attempting to win enough points to achieve qualification for the South Coast Championship Regatta. This prestigious regatta is held as a one off event at the end of the coastal rowing seasons and allows the qualifying crews from each association to compete against each other in an attempt to discover the top crew in the Country for each status.

The South Coast Championship regatta is run by a different association each year. In 2007 it is the Hants and Dorset's year to run the regatta, it is set to take place on September 8th 2007 and will be held at Dorney Lake, which is also the chosen venue for the 2012 Olympic Regatta.

In addition to the championship events ran at the regatta there are also invitational events which allow the remaining crews who did not qualify with enough points to take part in open events which are commonly referred to as "the best of the rest". Please refer to appendix A for further details regarding the Hants and Dorset Amateur Rowing Association and appendix B for details of the South Coast Championship Regatta.

1.2 Dorney Lake

Dorney Lake is a man made world-class rowing centre set in a spectacular 400-acre parkland near Windsor. Dorney was chosen to host the World Rowing Championships in 2006, and is also the designated 2012 Olympic and Paralympic Games venue for rowing and flat-water canoeing. The lake took over ten years to design and build and involved more than 4 million tonnes gravel to be uplifted to construct the 2000 metre course which consists of eight lanes and five parallel warm-up lanes. Due to the revolutionary techniques used when designing the

course Dorney is considered one of the finest rowing venues in the world. Please refer to appendix C for further details.

2. Feasibility Study

2.1 Project Overview

The developer has been approached by Mr Mike Green (Hants and Dorset Chairman & Dorney Liaison) to design a system that will help organise and run the 2007 South Coast Championship Regatta to be held at Dorney Lake.

Up until now the regatta has always been organised and ran via a paper based system. All rowing club registrations, timings and results etc have been manually created and written out by hand. This current process results in hundreds of files of information being collected over the regatta period.

In 2007 the Hants and Dorset Amateur Rowing Association would like to change this system to something more efficient and modern, which will hopefully streamline the regatta process. They would like a system that could be viewed and updated in real time which all competitors could have access to. Additionally they would like all the regatta information to be stored in a central location therefore removing the need for the many files.

2.2 Initial Requirements & Analysis of Existing System

Early meetings with Mr Green have resulted in five initial high level requirements being outlined for the new system.

Four of the initial requirements can be considered functional requirements and can be split into two distinct areas. Requirements one and two being pre-regatta processes and requirements three and four being regatta day processes. Detailed with each requirement below is a brief description of the existing process.

Requirement

Streamline Rowing Club Registration Process

Existing Process

The current process for rowing club registration for the regatta requires forms to be sent out by the Hants and Dorset to all affiliated rowing clubs. The rowing clubs then have several months to complete these forms (by hand) and send them back to the Hants and Dorset. These registration forms are then checked over and typed up into separate text documents.

Requirement

Automated Programme Creation

Existing Process

The programme is currently generated manually. It involves members of the Hants and Dorset committee to use each of the rowing clubs registration documents to determine which crews need to be assigned to which events. Once complete another text document is created showing the events and their corresponding crews. This process can take several days to complete as there potentially up to 30 rowing clubs competing at the regatta each with as many as 20 different crews which would result in a possible 600 crews to be sorted and typed up.

Requirement

Real time input of events results

Existing Process

The results are currently written up manually using pen and paper onto results forms which were created before the regatta day.

Requirement

Report generation for regatta results

Existing Process

At the end of the regatta reports are currently generated showing the results of each event and the points that need to be allocated to the rowing clubs and association. This is again a manual process which is completed using the results forms created during the regatta. The reports are handed out to rowing clubs individually on paper after the prize giving.

The final requirement is a non-functional requirement and concerns the budget for this project. The Hants and Dorset has outlined that they have limited finances in terms of available capital meaning the budget for this project is limited. Although no specific amount has been mentioned the premises will be to make the project as cost affective as is realistically possible.

2.3 SWOT Analysis

Before any potential business options are considered or analysed it is important to weigh up the feasibility of actually creating a new system for the Hants and Dorset. This is crucial because if the organisational structure or budget of the Hants and Dorset is not capable of sustaining a new system then this project has to be deemed un-feasible from the outset, this is fundamental information as continuing with an unfeasible project will act as a time consuming waste of budget and resources which will ultimately end in disaster. To help analyse the feasibility of creating a new system for the Hants and Dorset I will use a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis. The SWOT analysis is part of the Harvard Policy Model; however it should be understood that Bryson (2000) discusses a weakness of this model being that it does not draw attention to specific issues or offer specific advice on how to develop strategies. Please refer to figure 2.3a for the completed SWOT analysis.

Creating A New System

<p>Strengths</p> <ul style="list-style-type: none"> • Modernisation of processes. • Streamline existing processes. • Increased efficiency of pre-regatta and regatta day processes. • Create central location for data collection and storage. • Redundancy of long manual tasks. • Increased capacity through freeing up available resources. • Superior validation of data entered. • Removing risk of lost data through easy backup facilities. • Fast efficient data changes or updates. • Automation of repetitive and tedious tasks. • Simplify existing processes. 	<p>Weaknesses</p> <ul style="list-style-type: none"> • Some staff training required. • Change in processes. • Unknown success factor. • Setup and running costs.
<p>Opportunities</p> <ul style="list-style-type: none"> • Data accessible from anywhere. • Advertisement through the system. • Merchandise sales conducted through system. 	<p>Threats</p> <ul style="list-style-type: none"> • Legislation could impact. • Data Security.

2.3a SWOT Analysis

As the SWOT analysis at figure 2.3a helps demonstrate the advantages and opportunities of creating a new system for the Hants and Dorset, far out way the threats and weaknesses. However this is hardly a surprise as this project in corporate terms is reasonably small and being conducted on a non-mission critical system which greatly lowers the overall risks attached to it. This is echoed by the fact that if the new system is deemed unusable at the end

of the project it will not directly affect the Hants and Dorset in terms of running the south coast championship regatta, as budget expenditure has been kept to a minimum and the worse case scenario being that the existing system is simply re-used for this regatta and the initial small investment made by the Hants and Dorset is lost, again making the project low risk.

As a result of the analysis the developer is confident in being able to move on to analyse the feasibility of potential business options for the new system.

2.4 Business Options

Based upon the research collected and using the initial requirements and understanding of the existing processes the developer has produced three potential business options that are available to the Hants and Dorset Amateur Rowing Association.

Business Option One

The first proposed business option for the Hants and Dorset will be a system that handles the pre-regatta processes. These processes include rowing club registration, which involves the individual rowing clubs registering the specific crews they would like to enter into the regatta and the programme creation, which uses the rowing club registration information to compile lists of which crews are entered into the which events.

Business Option Two

The second proposed business option will expand on option one. The pre-regatta processes will still be handled by the system; however this option will expand on this concept by including the regatta day processes. These processes include the input of results and times into the system in real time and report generation which will allow printable reports of results and other useful information being created instantly and distributed throughout the regatta.

Business Option Three

The final proposed business option expands further still on business options one and two. Not only will it handle all pre-regatta and regatta day processes but it will also enable the system to be flexible enough to be used for all future South Coast Championship regattas. As previously discussed the South Coast Championship Regatta is organised and ran by a different association each year, however the format of the regatta stays the same, therefore

there is the potential for the system if robust enough to be able to handle all future South Coast Championship regattas.

2.5 TELOS Analysis

To help further analyse the feasibility of these proposed business options the developer has completed a TELOS (Technical, Economic, Operational and Schedule) analysis. By evaluating each appropriate system in this way it can be ensured that a fair and structured evaluation is completed. Please refer to appendix D for the full TELOS analysis.

The findings of the TELOS analysis prove very useful when rating the proposed business options. It helps significantly in highlighting issues with each business option that would otherwise potentially be overlooked.

The first section of the TELOS analysis regarding the technical feasibility of the project leads to no conclusive findings, only that the technology required to complete this project taking into consideration the Hants and Dorset's requirements will be a web server, web programming language and database management server. These three technology areas all have many options available each of which are plentiful for the job required by the Hants and Dorset.

The economic feasibility is more interesting as it is concerned with the finances of the project. In this scenario it can be directly related to the technical analysis as the specific technologies used will undoubtedly be the main contributor to the overall cost of the project. One of the Hants and Dorset initial requirements was that expenditure of the project be kept to a minimum due to a tight budget, the early analysis of the costing conducted in the economic feasibility shows that there is a lot of scope available with the budget and it can be kept low by utilising certain technologies over others. This makes technology choice a very important area to the Hants and Dorset and will require further in depth analysis.

Legal and operational feasibility are both less important to this project as the new system will only be used by the rowing community and therefore does not have any commercial liabilities to concern itself with, also the system itself is required to streamline and refine the process

already in use, not dramatically change it meaning the operational process of the regatta should remain mostly unchanged.

Finally the schedule feasibility of the project, this is potentially the most interesting and important area as the project itself has a tight deadline ending on March 23rd, however more realistically all coding of the new system will have to be completed many weeks before that date. This puts the business options under great strain and limits the scope of the project to an extent where only business options one and two seem feasible.

2.6 Analysis of Business Options

The proposed business option recommended for the Hants and Dorset Amateur Association is business option two. There are many key advantages to this option when compared to the others available.

When comparing the feasibility of the three business options it becomes clear that business option three is simple un-realistic. This can be confirmed when looking at the timings (please refer to the schedule analysis appendix D), as to allow the system to deal with future south coast championship regattas will require all aspects of the system to made customisable. This is because the system would have to be able to deal with rules and regulation changes on the fly, for example if another association was to be created or new events such as sculls, pairs or eights were to setup then these changes would directly affect the usability of the system and therefore it would have to be versatile enough to be able to handle these changes without time consuming code re-writes. These customisable features would require many additional hours of coding and involve a very in-depth analysis to be completed on the Hants and Dorset in an attempt to discover what changes and therefore features would likely be required in future years. This does not even take into consideration the extra time required to test and validate these additional features. Essentially it is fair to say that business option three will increase the project size several times over and although the customisable feature may not be complex to code would simply take too long to implement and test within the given time frame.

The reasons for recommending business option two over business option one comes down to efficiency and complexity. Based on the analysis it is feasible to create a system that deals with both pre-regatta and regatta day processes. These two aspects can be combined to work

hand in hand allowing for a far more efficient and functional system. The addition of real time results and reporting will increase the level of complexity of the project, however not to an extent that it becomes unrealistic. The advantages of adding the features detailed in business option two are simply too important and crucial to the system to miss and not including them would just de-value the system as a whole.

It is for these reasons why business option two is the most feasible option for the Hants and Dorset Amateur Rowing Association and therefore the option that receives the developers approval and recommendation. Please refer to appendices D for full details of the analysis conducted.

3. Methodology

3.1 Requirements of a Methodology

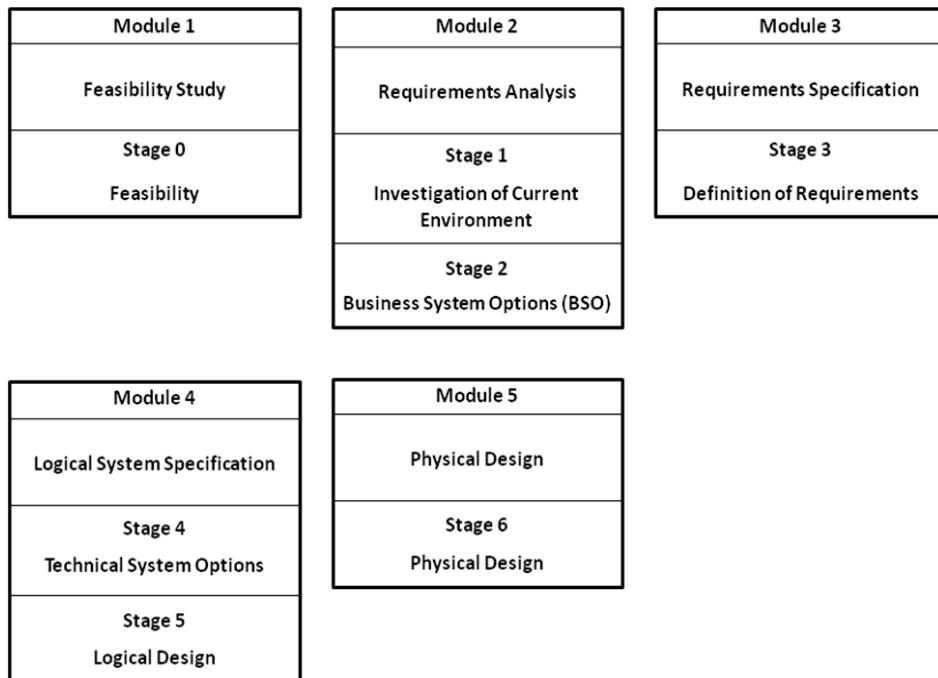
The methodology of choice for this project is very important. Although the project size and scope is not large in corporate terms it is still crucial to follow a strict process to ensure all stages of the project are completed to the highest quality. This statement is echoed by Goodland and Slater (1995) who state that major corporate companies expect the use of a disciplined engineering approach will eventually improve the quality of the systems they produce and because of this have been willing to incur the considerable expense of implementing methodologies with this expectation in mind.

A detailed analysis of the potential methodologies has been completed (please refer to appendix E). The developer has chosen to analyse a range of methodologies that will best show the options available to the Hants and Dorset. It also details advantages and disadvantages for each methodology in relationship with a project of this type. The analysis researches into the following forms of methodologies - The Waterfall Model, SSADM, DSDM, RUP and agile methods.

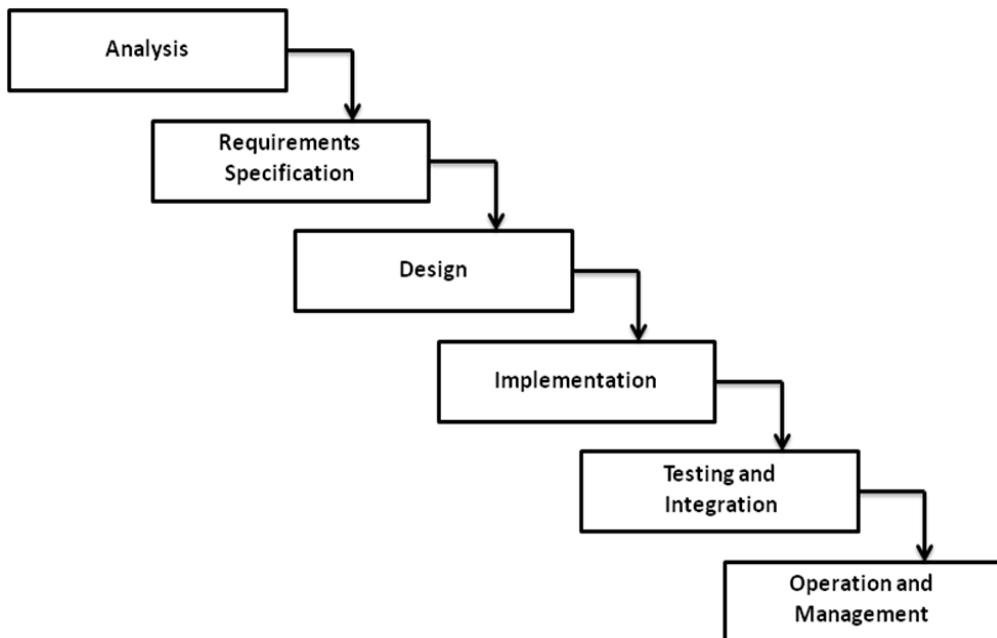
3.2 Choice of Methodology

After a detailed analysis of the available options two methodologies have been chosen as this projects basis. These are Structured Systems Analysis and Design (SSADM) and an iterative approach as found in methodologies such as DSDM and RUP. Weaver et al. (2002) state SSADM is based primarily on the waterfall model and can be thought to represent a pinnacle of the rigorous document-led approach to system design. SSADM consists of 5 main modules, which are in turn broken down into a complex hierarchy of stages.

The five modules of SSADM including their individual stages can be seen at diagram 3.2a, along with the classic waterfall model at 3.2b.



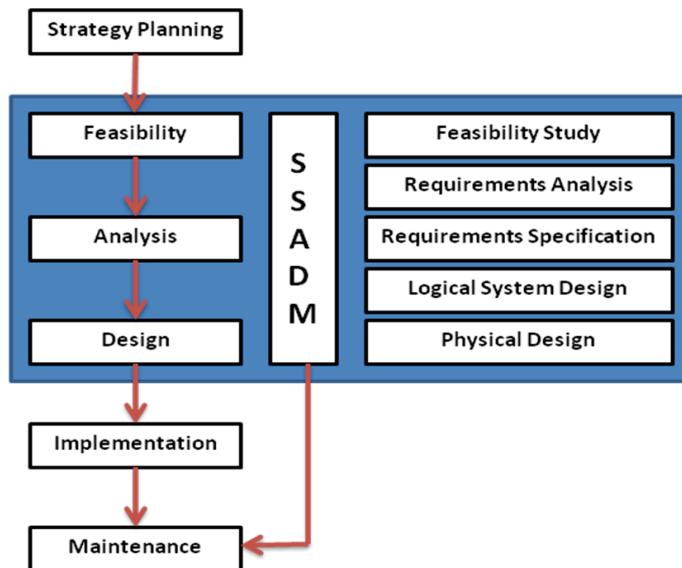
3.2a Modules and Stages of SSADM



3.2b Classic Waterfall Diagram

The analysis of the two methodologies shows similarities throughout the early stages up until the implementation stage. Unfortunately SSADM does not detail the later stages of the project and anything after the physical designs is really left to the prerogative of the user. This is unpractical as up until this point SSADM supplies a very rigid document-led approach

and to abandon this strict structure, replacing it with nothing is unacceptable and for this reason why two methodologies are required to allow a consistent structure throughout the entire project. This is emphasised further when analysing SSADM against the life-cycle process in diagram 3.2c.



3.2c SSADM Life Cycle

As a result SSADM will be used as the basis only up until the physical design stage and at this point an iterative and incremental development methodology for the software development process will be utilised, which will directly combat the weaknesses of SSADM, this decision is directly backed up by the analysis of Kroll and Kruchten (2003). The reason for not dropping SSADM completely for a more agile method is that SSADM does have many strengths, for example it bases heavy emphasis on documentation which is a crucial asset as it ensures a clear defined structure is followed and any system changes are explicitly documented which in turn ensures constancy is upheld throughout the projects life cycle, something that agile methods often miss prioritise.

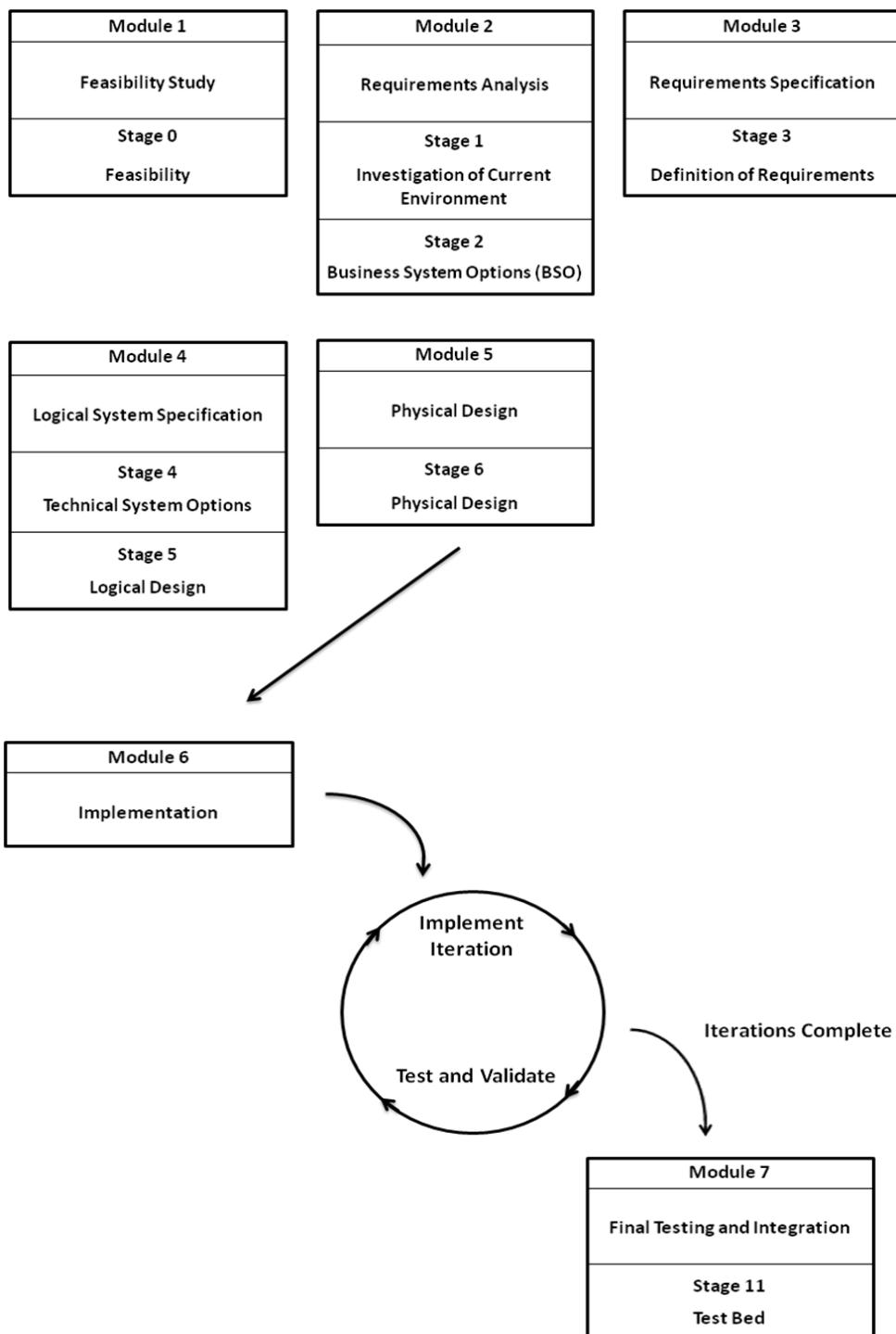
The most well known iterative development frameworks are DSDM and RUP and although neither of these methodologies will be followed directly it supplies a useful basis on how to successfully implement a product through the use of iterations. The basic idea behind iterative enhancement is to develop a software system incrementally, allowing the developer to take advantage of what was being learnt during each stage. This iterative approach will work well for a project of this size and tight deadline as it will allow the project

implementation stage to be broken down into iterations, this will have the following key advantages which coincide directly with requirements laid down by the Hants and Dorset committee.

- Firstly it will enable each iteration to handle a certain aspect of the system. As the individual iterations are completed a new part of the system is added until finally the full system is completed. This is an advantage as it lets the developer visualise each part of the system in a smaller more manageable portion, instead of trying to visualise the entire system as a whole.
- Once an iteration has been implemented it can be tested and validated before the next iteration is started. This is helpful as it breaks down the testing process and builds a constant and consistent level of quality assurance throughout the implementation of the system.
- After each iteration has been completed it should be fully working in its current form. It may not have full system functionality or cover all aspects of the customer's requirements, however it will allow a small aspect of the system to be used. This means that there is the possibility for the customer to sample a working part of the system very early in the implementation process. This in turn enables any changes to be made to the system at an early stage of development in comparison to when the system is fully implemented and therefore potentially requiring heavy re-coding. This advantage is emphasised by McConnell 1996, p. 72, who states that "a requirements defect that is left undetected until construction or maintenance will cost 50 to 200 times as much to fix as it would have cost to fix at requirements time."

3.3 Project Management

Based on the methodology research completed a project plan can be successfully created that caters directly for this specific projects needs as well as the initial requirements set out by the Hants and Dorset committee. Please refer to the diagram 3.3a for details of this plan.



3.3a Methodologies in Use

As you can see the early stages stay consistent and strictly follow SSADM, however the implementation section of the project will be handled through iterations. Please refer to appendix F for the full project Gantt chart based on this structure.

4. Analysis

4.1 Overview of the Existing System

The system currently in use at the Hants and Dorset for organising and running the South Coast Championship regatta can be split into two main areas. These are Pre-Regatta Processes and Regatta Day Processes.

Pre-Regatta Processes

Three months before the South Coast Championship regatta is held registration forms are sent out via post to each affiliated rowing clubs secretary (there are approximately thirty affiliated coastal rowing clubs in total across the United Kingdom). Each rowing club's secretary has one month to complete these forms and collect entry money before sending them back to the Hants and Dorset's secretary. The registration forms include details of every competitor as well as their corresponding crew and which event the crew would like to be entered in. (Please see Appendix G). Once the Hants and Dorset's secretary has received the registration forms they are typed up into separate text documents. Once the registration forms are received the registration process for the rowing club is complete.

Once the registration deadline has been reached the programme can be created. This is a manual process completed by the Hants and Dorset committee. The process involves splitting every crew from each rowing club into their specific events. This process also requires the championship crews to be verified ensuring they have in fact scored enough points to be entered into the championship event. Championship events consist of the top two crews of each status from each association therefore having a total of six crews. The invitation events consist of the remaining top eight crews of each status from each association.

Regatta Day Processes

On the day of the South Coast Championship Regatta three main pieces of data are collected:

Crew Changes - It is possible for a crew in Invitational Events to replace a maximum of two crew members before their event begins, however these crew member must be taken from a pre-registered substitute competitors of the correct status. This information if changed is updated on the text document that was written by the Hants and Dorset secretary at the time when the registration forms were collected.

Results - All results are recorded in a results document for every event. They are updated manually by hand as the event finishes, however are not published until the end of the regatta.

Timings - All times from every crew are recorded in every event. This is also written in the results document next to the crew's name.

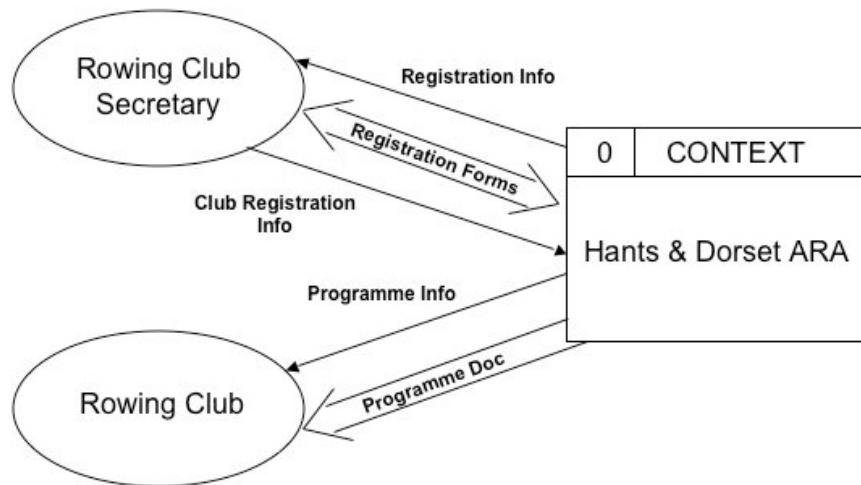
Once the regatta has finished four committee members are assigned the job of typing up the results and times into a final results document they also allocate points to rowing clubs and associations based on these results, these points are calculated to show which rowing club and association was the most successful at the regatta. When complete this information is made available to competitors by printed copies that are passed to the rowing clubs. It is this document that is also used during the prize giving.

Please refer to appendix H for examples of documentation used by the existing system.

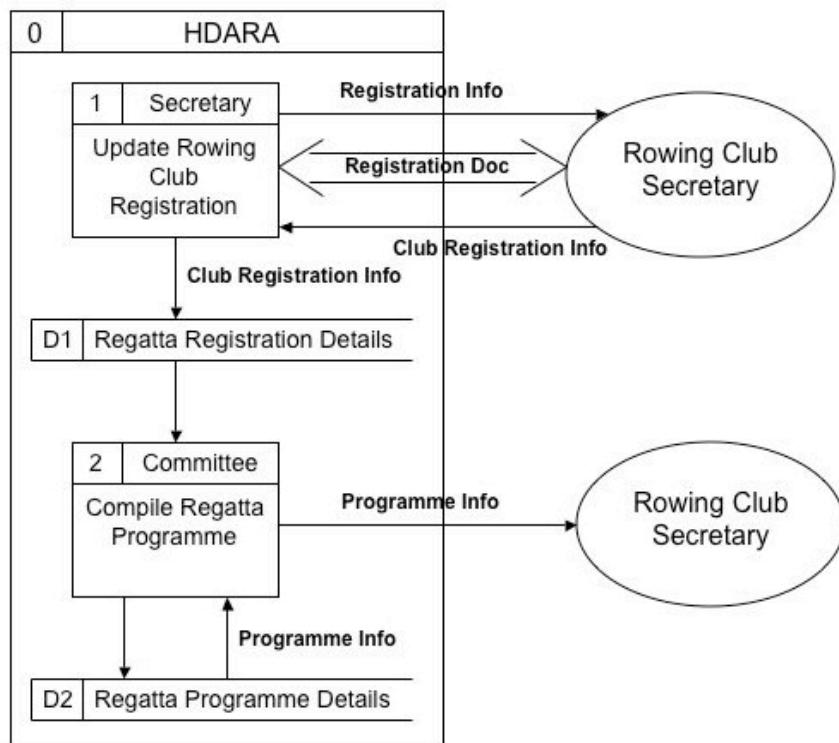
4.1.1 Data Flow Diagrams

To help further analyse the existing system the developer has utilised Data Flow Diagrams (DFD's). These are graphical representations of the flow of data through the system which will help clearly explain in pictorial form the written analyse previously conducted. They will become especially important when analysing the problems with the existing system as they will allow for a top down overview of the system which will become invaluable when trying to clearly explain the outcomes. As with previous sections the DFD's have been broken down into two areas - Pre-Regatta Processes and Regatta Day Processes, this is important as the data flows between these two areas are quite different and should be considered as separate parts/stages of the system. For both the Pre-Regatta and Regatta Day Processes a context diagram has been created to show interactions between the system and the outside entities and then they have been "exploded" to show more details of the systems being modelled.

Pre-Regatta Processes

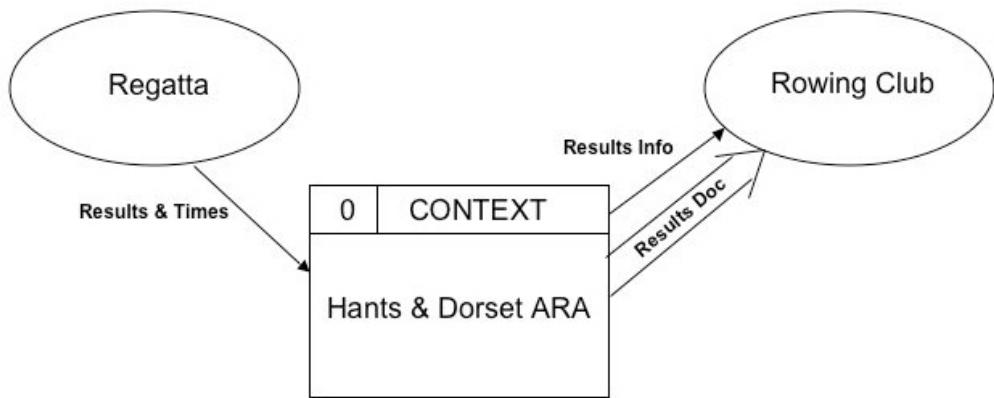


4.1.1a Pre-Regatta Processes Context Diagram

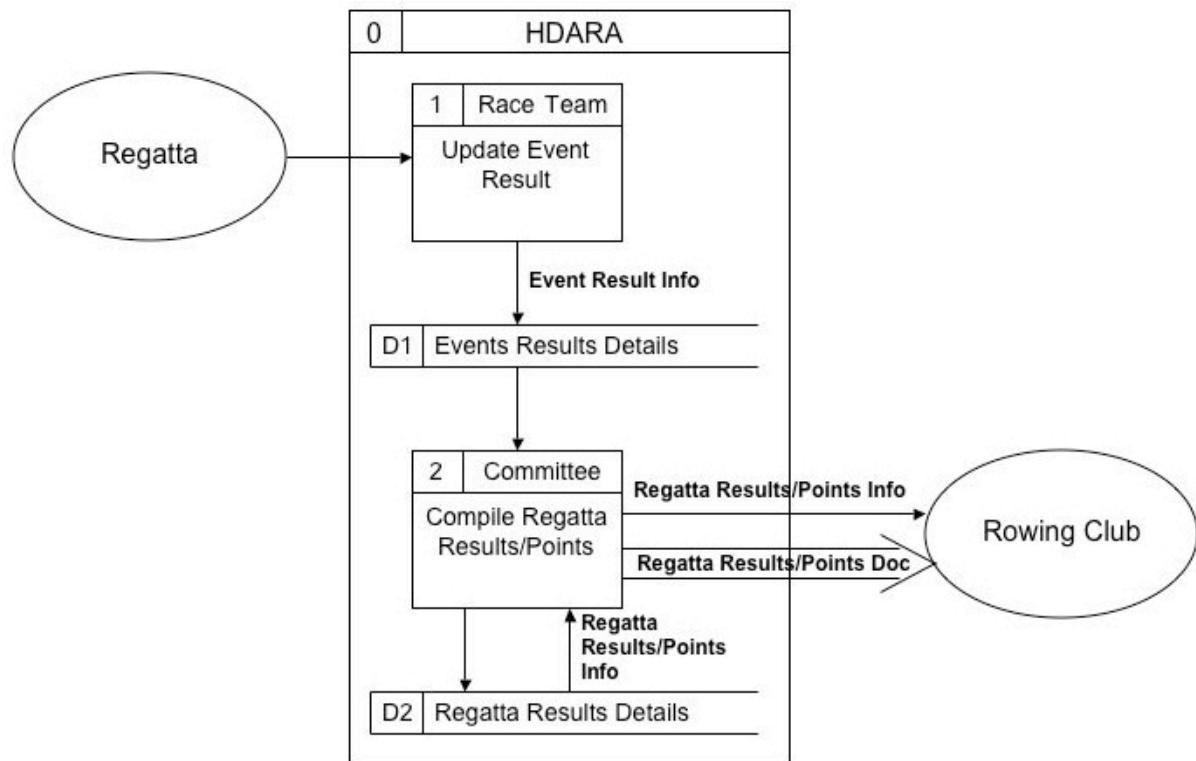


4.1.1b Pre-Regatta Processes Level One Diagram

Regatta Day Processes



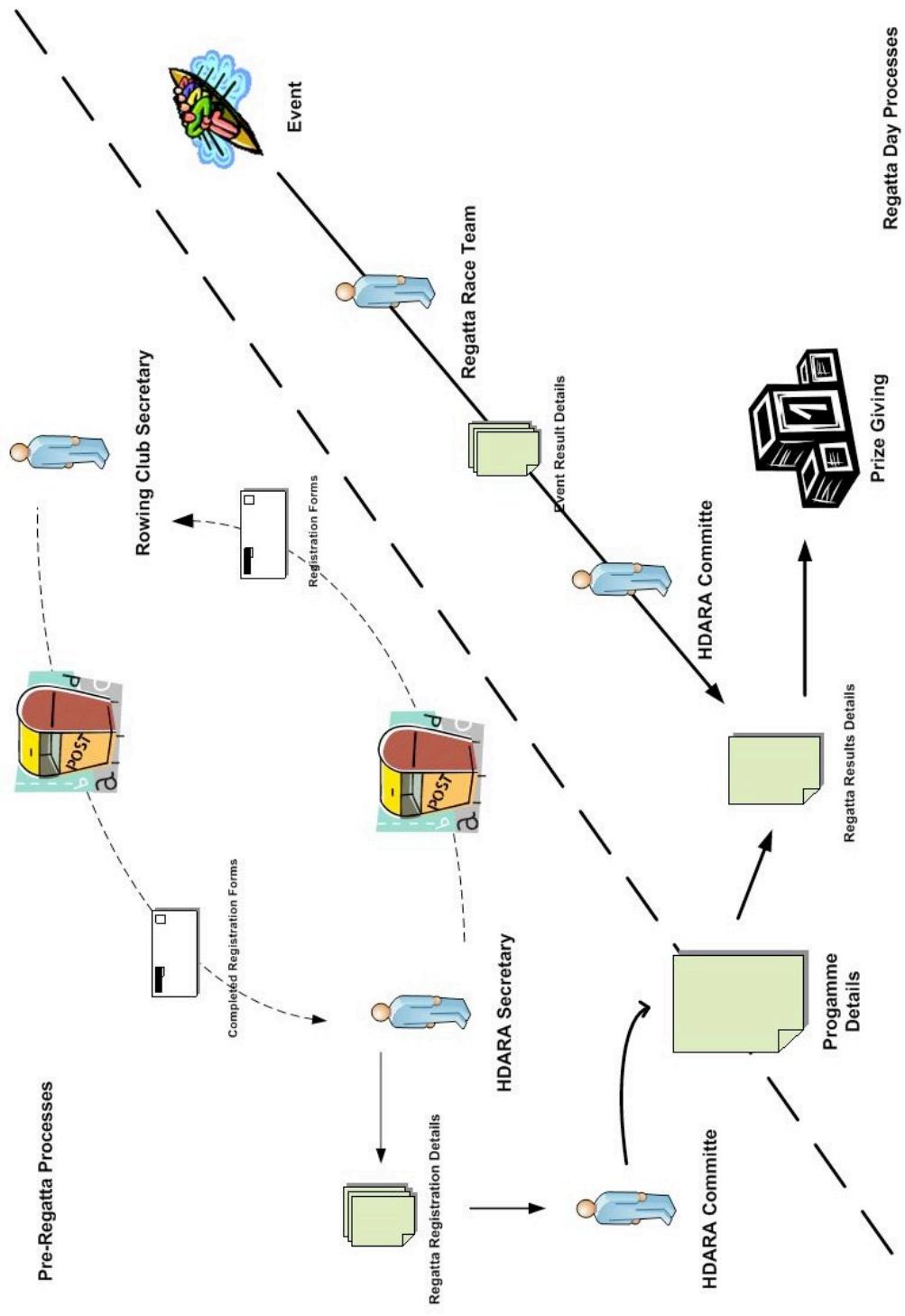
4.1.1c Regatta Day Processes Context Diagram



4.1.1d Regatta Day Processes Level One Diagram

4.1.2 Rich Picture

The diagram at figure 4.1.2a is a rich picture which has been created to allow easy understanding and breakdown of the pre-regatta and regatta day processes. It uses the philosophy that a picture paints a thousand words and hopes to clearly outline the existing system used by the Hants and Dorset as a whole.



4.1.2a Pre-Regatta and Regatta Day Processes Rich Picture

4.2 Analysis and Problems with the Existing System

The current system in place to run the South Coast Championship Regatta relies on a completely manual process. It requires members of the South Coast Championship committee to manually write up to text documents each time information is collected or updated. All correspondence with registered clubs is currently completed through the post and with the use of simple forms that are filled out by the clubs secretaries.

The rowing club registration process currently in place is full of potential issues and inconstancies. For example all entries for the regatta are completed by mailing registration forms back and forth between the Hants and Dorset secretary and the rowing clubs secretary (as shown in figure 4.1.1b). A main issue with this is the lead-time to send and receive these forms. This can often lead to only receiving the entries from some rowing clubs a short time before the final deadline. This issue adds pressure to get this information written up so the regatta programme can be calculated and completed. Another issue with this is the way the information is sent. The postal service is an unknown entity which the Hants and Dorset have no power to control. If the registration forms are lost or miss sent then the information on these forms is also lost. The final issue with the rowing club registration process is the fact that the rowing club secretaries fill out the forms by hand. The Hants and Dorset committee state that because of this there are often mistakes made when it comes to writing up the information and any mistakes made at this early point escalate throughout the rest of the system. For example if crew names are miss-read from a registration form then that incorrect information will be passed through to the regatta programme. This issue then because difficult to resolve as it will probably not be noticed again until the day of the regatta.

Similar issues apply to the regatta day processes (as shown in figure 4.1.1d) as again all the information is collected and written up by hand. This opens all this information up to human errors. If the wrong result time is written next to a crew or miss-read then potentially the wrong crew could be awarded an incorrect result which will escalate to the regattas point calculations making them incorrect and requiring a recount which is a waste of both time and resources. Leading on from this if certain sheets such as the results document are lost or destroyed then there is no way to recover this information which would result in disaster for the regatta.

This analysis shows the main areas with the current system that can cause issues and many other points that could be made far more efficient. It is these issues and efficiency points that the Hants and Dorset would like to resolve by creating a new system which incorporates modern day techniques and technology.

5. Requirements

5.1 Overview of Requirements

A requirements catalogue has been completed as specified by SSADM, which lists all functional and non-functional requirements for the system. Each requirement is analysed with a specific ID, priority rating, title, description, solution, current solution and related requirements. (Please see Appendix I). This allows for a comprehensive investigation of each requirement ensuring all aspects of the system are accounted for as well as ensuring a consistent structure is upheld throughout the analysis. The owner/source of the requirement which is usually specified has not been taken as all the requirements are taken from the Hants and Dorset committee as a whole. A total of twenty requirements have been identified (twelve functional and eight non-functional). Please see Appendix J for the requirements catalogue.

5.1.1 Functional Requirements

Functional Requirements are activities that the system is required to perform; they define the internal workings of the software: that is, the calculations, technical details, data manipulation and processing. Wiley and Chichester (1991) state the standard range of functional requirements are storing and retrieving data, updating data, producing reports, answering enquires and interacting with other systems.

Using the requirements catalogue the eight most important functional requirements based on the priority rating and relationship to the system have been identified. As previously shown these requirements can be split into two areas, pre-regatta processes and regatta day processes. An overview of these requirements split in this way can be seen below. Please refer to appendix K for a detailed analysis of all functional requirements.

Pre-regatta Processes

F1 - Data Collection which involves all regatta data to be stored, viewed and updated from a central location.

F2 - Segregation of Users which allows three types of user to have access to the system. Each of these users must only have access to create, view or update information that corresponds

with their access level. Information that does not apply to them should not be visible at any point on the web application.

F3 - Rowing Club Registration which allows rowing club registration information to be collected directly from rowing club secretaries and be readily accessible and easily updated by the south coast championship committee.

F4 & F9 - Creation of Automated Programme which splits all crews into their specific events and a Report that can be printed showing these details.

Regatta Day Processes

F6, F7 & F10 - Input of Regatta Results and Times directly into the system after each event has been completed and a report that can be printed showing these results.

5.1.2 Non-Functional Requirements

Non-Functional Requirements are as the name suggests not functions or capabilities of the system. They cover important requirements such as performance, security, recovery archive and audit. This statement is backed-up by Goodland and Slater (1995). Non-Functional Requirements are often associated with particular functional requirements.

Four key non-functional requirements based on the priority rating and relationships to the system have been identified. An overview of these requirements can be seen below. As these are non functional requirements they cannot be broken down into areas and instead should be constantly upheld. Please refer to appendix K for a detailed analysis of all the non-functional requirements.

NF1 - Simplify Work Flow which will streamline the process reducing the number of steps between sending and receiving information between the Hants and Dorset committee and rowing clubs.

NF3 - Ease of Use which ensures ease of use for Hants and Dorset committee and rowing clubs.

NF6 - Budget. The Hants and Dorset have a very limited budget available for the design, implementation and maintenance of the system. Therefore it is important that the technologies chosen for the system take this into consideration.

NF8 - Security. The system must be secure from potential attackers and ensure that specific users only have access to parts of the system that have been granted to them.

5.1.3 MoSCoW Rules and Entity Grid

To help further analyse the requirements of this project a form of the DSDM Consortiums (2006) MoSCoW Rules will be utilised. This will allow the requirements to be prioritised helping to better understand which are essential and which are less critical to the system. It will also help clearly define an order in which the requirements must be completed. Please refer to appendix K for the MoSCoW rules analysis. An entity grid based on the SSADM specification and as suggested by Weaver et al. (2002) has also been compiled which can be used to see the relationships between requirements; this will go further still in helping to rank the requirements. Please refer to Appendix L for the Entity Grid.

The requirement analysis processes have helped detail clearly the path that needs to be taken through this projects design and implementation stages. This information is crucial and will be the backbone as to what the previously mentioned implementation iterations will be made up of. Using the analysis it is clear that for a results and timings system (requirements F6 and F7) to be operational it will first need data about the rowing clubs and crews that are registered with the regatta. This is shown specifically by the MoSCoW rules and entity grid where the requirements F6 and F7 are directly related and dependent on the requirements F3 and F4. Therefore it is clear a results and timing system can not be implemented before rowing club and crew registration system is operational. This process of dependencies and relationships builds up a clear path that needs to be taken through the design and implementation stages of the project and will be used to separate the functional requirements into iterations.

5.2 Analysis of Requirements

Using research collected the MoSCoW Rules and SSADM Entity Grid analysis the functional requirements have been successfully ranked. Please refer to appendix J for a full break down of the requirements based on their requirement ID.

Priority Order	Requirement ID
1	F1
2	F2
3	F3
4	F4
5	F6
6	F7
7	F9
8	F10
9	F5
10	F8
11	F11
12	F12

The non-functional requirements do not require ranking as they are not actual functions of the system only requirements that should be constantly upheld, such as usability and security. By following this model it should ensure that all requirements are met in an order that does not create confliction and should guarantee that the highest priority requirements are given preference over requirements that are less critical to the system therefore ensuring the majority of the design and build time is spent on the most mission critical requirements.

6. Literature Review

6.1 Aim of Literature Review

This literature review will investigate and discover what technologies are required to make this project a reality, while consistently striving to keep the Hants and Dorset Amateur Rowing Associations requirements in focus and use these requirements as the scope of the research. Based on the analysis completed by the feasibility study it is clear that the technology exists to make this project a feasible option, however the details of the technologies to be used have not been investigated in depth. This is a very important aspect of the system as the technology used can fundamentally change the way the application looks, feels and even operates. The technology decision becomes greater still in the Hants and Dorset's case where issues such as a limited budget and lack of technical knowledge have been specifically stated; therefore many technologies are simply not available for use because of these limiting factors. The literature review will aim to analyse these factors and conclude with viable options for the Hants and Dorset Amateur Rowing Association .

6.2 Technology Analysis

The Internet has quite simply changed the way we live. Whether you're looking at it from a business or personal perspective the impact that the Internet has had on our lives is huge.

Nielsen//NetRatings (Global leader in Internet media and market research) statistics for September 2006 show that over 70% of the United Kingdom now have Internet access at home and the average user spends over 26 hours a month surfing the web.

United Kingdom: Average Web Usage Month of September 2006 Home Panel	
Sessions/Visits Per Person	30
Domains Visited Per Person	70
PC Time Per Person	26:51:34
Duration of a Web Page Viewed	00:00:46
Active Digital Media Universe	24,132,491
Current Digital Media Universe Estimate	33,955,539

6.2a Nielsen//NetRatings Internet Index (September 2006)

These figures are startling considering that as stated by Cerf (2004) the Internet only became widely available to the home user with the release of Microsoft's Windows 95 operating

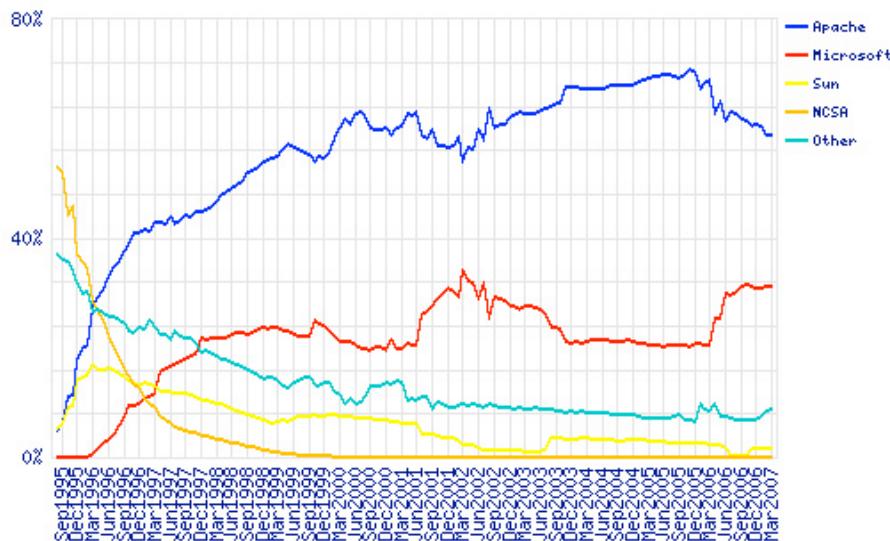
system in 1995. Therefore this impressive growth has taken place in just over 10 years, however this growth hardly comes as a surprise as the Internet is now available almost everywhere. Whether at work, at home or even outside Internet access is only a few steps away. For example it is now widely available through portable devices such as PDA's and with the introduction of wireless technologies it is now possible to use your laptop connected to the Internet in public places such as bars and cafes.

It is fair to say that the Internet has become one of the world's biggest revolutions and contributes to one of the main reasons why many companies are now conducting a lot of their business through the Internet.

The Hants and Dorset Amateur Rowing Association (HDARA) want to become part of this revolution. In the meetings conducted with the committee they expressed their enthusiasm to take advantage of this new technology and push the now dated regatta organising processes to new a new level.

I believe the best place to start this study is from the bottom up; this will be completed in reference to Cisco Systems Open Systems Interconnection (OSI) model (2001) which starts with the physical requirements working up to the application requirements. However the study will only detail options available to the HDARA and therefore any fixed variables will not be studied or evaluated. The stages of analysis will be Operating Systems, web servers, programming/scripting languages and database management systems.

Web server and operating systems will be combined research as they are directly dependant on each other. Netcraft Web Server Survey has been analysing Web Server usage since 1995 and has build up a detailed set of results for every month since that time. As of March 2007 the Web Server usage shows two main contenders. The Apache HTTP Server currently has 60% of the market share, followed by Microsoft's IIS with 30%; the resulting 10% is made up of other dated or lesser known web servers. Please refer to the diagram at 6.2b for a detailed breakdown from 1995 to present day.

Market Share for Top Servers Across All Domains August 1995 - March 2007

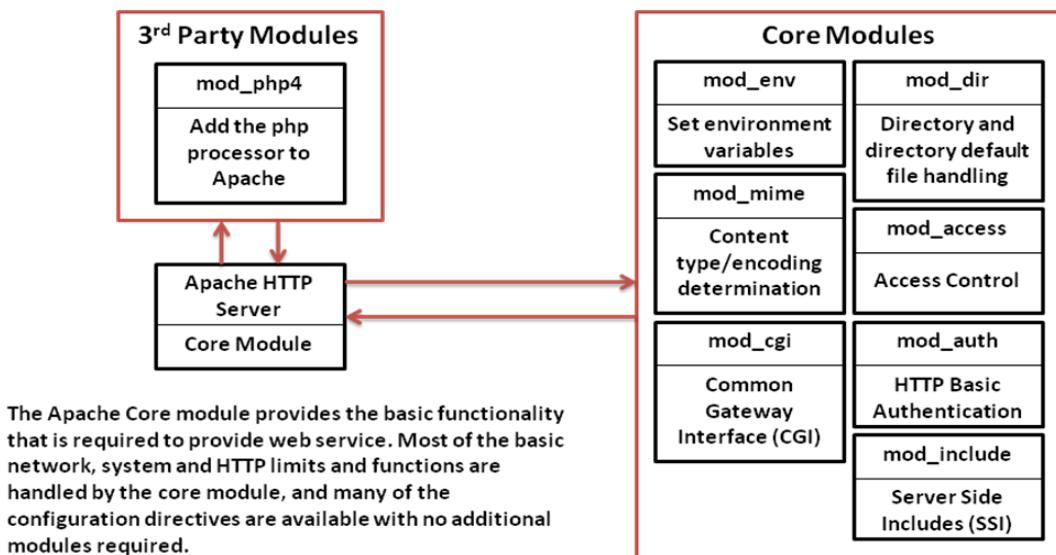
6.2b Netcraft Web Server Survey 1995 - 2007 (March 2007)

Farber et al. (1999) states the Apache HTTP Server is notable for playing a key role in the initial growth of the Internet. When first released, Apache was the only viable open source (free software) alternative to the Sun Java System Web Server. It has since evolved to rival other UNIX-based web servers in terms of functionality and performance and Since April 1996 Apache has been the most popular web server on the Internet.

Apache is continuously developed and maintained by an open community of developers known as the Apache Software Foundation. Apache is open source software, which means anyone has the right to run, study, modify or improve it. It is this open availability that has made Apache such a success, as anyone can take the software and use it without having to pay expensive licence fees and as a result many companies have integrated Apache into their software, for example IBM have modified Apache to manage their highly popular WebSphere server software. The fact that the software is free to use is a very interesting point for the Hants and Dorset due to their previously stated limited budget. The open availability of Apache leads on to many other advantages, such as it being constantly at the forefront of technology and can be configured to run practically any web programming language. This flexibility as stated by Stein and MacEachern (1999) is made possible through the use of Apache modules which implement everything except serving static files, this means that modules can be created that connect to Apache and allow it to serve different types of files

such as PHP etc. Apache developer Ryan Bloome (2004) considers this to be one of the biggest advantages of Apache over other Web Servers.

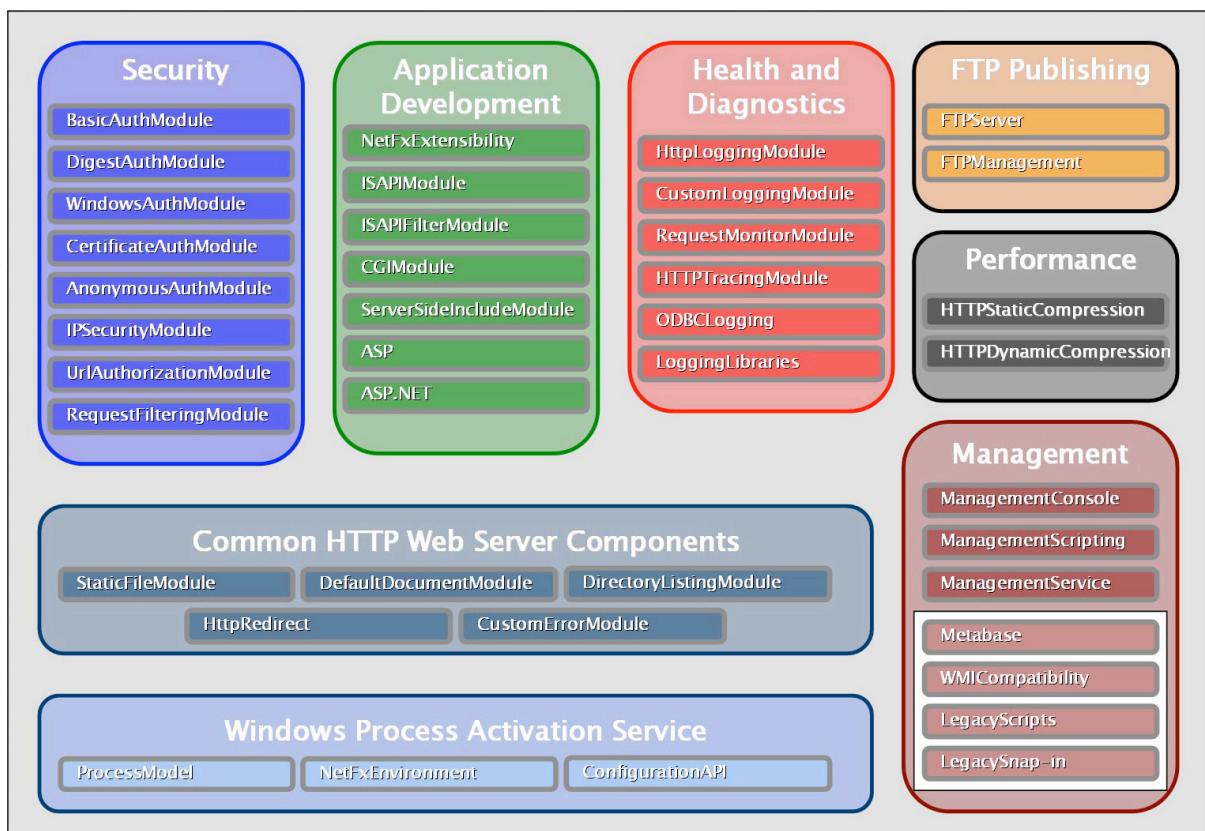
The diagram at figure 6.2c shows the Apache HTTP server utilising the modular architecture. It is clear to see how easy it would be to add new modules without affected the Apache Core.



6.2c Apache Modules - Including Core Module

Apache was originally designed to run on the UNIX platform, however now supports many other operating systems, this again showing the versatility of the Apache HTTP server, however Apache is still most suited to the UNIX/LINUX platform and it is in this configuration that it is most commonly found. The UNIX operating system is considered by many “as the most important operating system you may never use” (Moritsugu 1999), this is because nearly all Apache HTTP server driven web sites will be running a form of UNIX, therefore when you are surfing the Internet you are constantly interfacing with a UNIX operating system without ever realising. Farber. et al (1999) states UNIX systems are characterized by various concepts: the use of plain text for storing data; a hierarchical file system; treating devices and certain types of inter-process communication (IPC) as files; and the use of a large number of small programs that can be strung together through a command line interpreter using pipes, as opposed to using a single monolithic program that includes all of the same functionality. This UNIX environment and the client-server program model were essential elements in the development of the Internet and UNIX as an operating system can be considered secure and fast in multi-user and multi-process environment.

Microsoft's Internet Information Services (IIS) is a set of Internet-based services for servers running Microsoft Windows. The current shipping version of IIS is version 6.0 for Windows Server 2003. In 2007 Microsoft plan to ship IIS version 7.0, which will be pre-installed with their new server operating system codename Windows Longhorn. A streamlined version of IIS 7.0 can already be found in Windows Vista. For the first time with IIS 7.0 a modular architecture will be utilized (similar to that used by Apache). This is instead of a monolithic server, which features all services. This means that like with Apache modules offering specific functionality can be added to the engine to enable its features. The advantage of having this architecture is that it allows the administrator to deploy very thin, task specific server as well as lock out functionality that is not required therefore increasing security. The Microsoft white papers show forty components (modules) available with the IIS 7.0 install that can each be configured directly by the administrator. The diagram at figure 6.2d outlines these forty components.



6.2d Microsoft IIS 7.0 40 Component Design

Unfortunately IIS still has one major issue that many users cannot disregard. This issue being that it can only run on the Windows platform. Although many improvements have been made in Windows security it is still the most attacked operating system in the world (Brown, 2003) and because of this has the most known vulnerabilities. It is for this reason why many companies simply refuse to use Windows servers to host their externally facing web sites. For example Eli Lilly & co are a world leading pharmaceutical company who have a large and complex IT infrastructure, they are one of the few companies to own a Class A IP address and host hundreds of mission critical web sites all over the world, however none of their external sites are hosted on a Windows platform because of the potential security vulnerabilities (Peterson, 2006). Although security is a potential issue for IIS it does have one useful advantage. Compared with Apache, which is generally controlled from the command line, IIS is very easy to setup and configure as it based on the Windows platform therefore most of the setup is completed through step-by-step wizards.

This concludes the analysis of web servers available. Both Apache and IIS web servers have their advantages and disadvantages, although are both feasible options for the HDARA. The only real disadvantage from the HDARA's perspective is that IIS only comes built with Windows Server that requires a licence to operate which initially costs £350 and generally increases the price of hosting on this environment, however configuration of this environment is generally considered to be easier, therefore lends itself to the lack of technical knowledge of the Hants and Dorset committee.

The next main technology area requiring analysis is web scripting languages that are used to create dynamic web applications.

It is commonly known that HyperText Markup Language (HTML) is the predominant markup language used for creation of static web pages on the Internet. HTML has gone through many versions each time enabling the users to do more with the language and create faster more intuitive web sites. There are break off versions of HTML such as XHTML, which is a separate language to HTML that began as a reformulation of HTML 4.01 using XML 1.0. XHTML 1.1 is currently available and is essentially a strict version of HTML. As recommended by the W3C (World Wide Web Consortium) XHTML 1.1 guidelines should be tightly followed when creating web sites to ensure compatibility and accordance with rules

and regulations. Therefore it's clear that the HDARA will use XHTML as its web standard and abide by these rules. However XHTML is still only a static language and therefore for the web application to be able meet the HDARA requirements it will need to be dynamic and be able to send and receive data from a user to a database. As a result a web scripting language will have to be used to make the web application dynamic.

TIOBE Software (The coding standard company) run monthly analysis on the programming community and gives an index of the most popular programming languages, from this index the developer has chosen to analyse three web scripting programming languages.

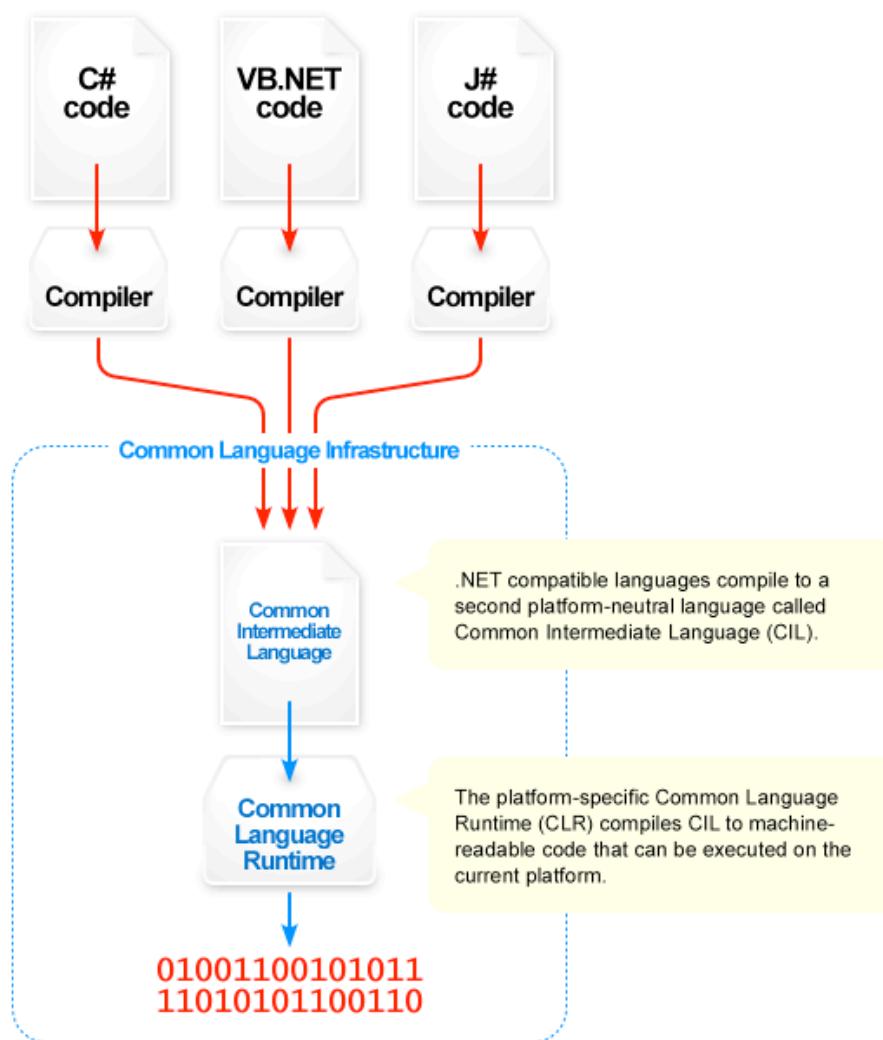
Position Mar 2007	Position Mar 2006	Delta in Position	Programming Language	Ratings Mar 2007	Delta Mar 2006	Status
1	1	=	Java	18.044%	-3.84%	A
2	2	=	C	15.633%	-2.16%	A
3	3	=	C++	11.109%	-0.05%	A
4	4	=	PHP	9.458%	-0.49%	A
5	5	=	(Visual) Basic	8.147%	-1.74%	A
6	6	=	Perl	6.420%	0.00%	A
7	8	↑	Python	3.897%	+0.80%	A
8	10	↑↑	JavaScript	3.485%	+1.75%	A
9	7	↓↓	C#	3.365%	+0.22%	A
10	21	11 * ↑	Ruby	2.773%	+2.31%	A

3.2e TIOBE Software Programming Community Index (March 2007)

The first web programming language under consideration is ASP.Net. ASP.Net is part of Microsoft's .Net platform and is built on a common language infrastructure (CLI), meaning programmers can write in ASP.Net using any Microsoft .Net language. It is the successor to Microsoft's Active Server Pages (ASP) and it is basically a set of web application development technologies approved by Microsoft. A few key advantages to ASP.Net are that it is object-oriented and has many programming tools that allow for faster development and more functionality. However Walther (2003) states it is the common language infrastructure (CLI) or common language runtime (CLR) as it is known by Microsoft that is the most important component of the .Net framework as it allows programmers to write their code in

more than 25 .Net languages (including VB.Net, C#, and JScript.Net). This allows programmers to develop their application in the language that best suits them. It is also for this reason why ASP.Net is not specifically listed in the programming index. Unfortunately as with other Microsoft products its main hindrance is that it needs to be hosted on a Windows Server and therefore reduces the options for the programmer in terms of other resource that can be used.

The diagram at figure 6.2f shows how the Microsoft CLR is utilised within the .NET framework.



6.2f Microsoft .NET Common Language Runtime

The second option under consideration is the Hypertext Preprocessor or PHP as it is more commonly known. PHP started as a simple scripting language for adding basic dynamic

content to websites; however it has grown to become one of the most used and highly appreciated web-programming languages available today. PHP is free for download and works very well on many operating systems which is a particular strength as it can be used to develop websites on a desktop system which can then be deployed onto an industrial-strength and secure server such as UNIX. The hugely successful XAMPP bundle of XHTML, Apache, MySQL, PHP and PERL has helped the rapid uptake of PHP. Since Apache, PHP or MySQL don't require any form of commercial licence and have all proven themselves on high volume websites, they are very attractive options for those who come from the world of highly priced proprietary packages.

The final language under consideration is Ruby. As specified in the figure 3.2e the programming community index chart Ruby has increased in popularity immensely over the past twelve months jumping over ten places on the index into the top ten. This increased popularity of Ruby can mainly put down to the framework known as Ruby on Rails. Ruby by itself is a standard programming language like PHP although by many programmers is believed to be a more elegant and powerful programming language than the majority of its competitors (Feldt. Et al, 2002). Ruby on Rails is simply a framework written in the ruby programming language. The framework is essentially a support structure that is put in place to help programmers, this is because the majority of the time that programmers spend writing large web applications isn't actually spent on the specifics of the program's functionality, but instead it's spent doing much more general programming, for example writing reusable pieces of code that can be called throughout the main application. These reusable components are collectively referred to as the program's framework. Ruby on Rails provides a good framework for programmers coding in Ruby which makes it much easier to add, update and modify parts of an application that do similar tasks, this is completed through pre-written libraries that can be called to handle common tasks therefore rapidly increasing the speed of development of the application. It is this modern framework that has made Ruby so popular for programmers and in turn has resulted in the rapid up take of the language.

This concludes the analysis of web scripting Languages. ASP.Net, PHP and Ruby on Rails have many advantages and disadvantages. The obvious issue with ASP.Net for the HDARA is the licence fees attached to using the language as it has to run on the Windows platform

which as previously revealed can be an expensive and less secure option when compared to its competitors. The ideal choice would be Ruby on Rails, it has a large developer community and specifically caters for rapid application development which suits the tight timeframe associated with this project, unfortunately it has one major issue, that being that it is based on the Ruby programming language and would require prior knowledge of this language. This is something the developer does not have and the time required to secure a good level of knowledge would simply be too long. This leaves PHP as the obvious and most feasible choice as it also has a wide developer community and continues from the Apache HTTP server in that it is available freely without the need of a licence.

The final aspect that is technically important for this project is the consideration of database management systems (DBMS). The DBMS is a crucial component of dynamic web application as it is where all data from the application will be stored. Therefore a dynamic web application is really only as good as the database that's behind it. The two most highly used and popular DBMS used on the Internet today are MySQL and Oracle.

MySQL is a multi-threaded, multi-user, SQL database management system. MySQL is very popular for use with web applications and is very commonly used alongside PHP. MySQL is characterised as a fast, reliable open source relational database. The fact that it is open source helps backup the reasoning why it is often used in conjunction with PHP as both are all freely available. MySQL is known to lack some sophistication and facilities, however it has an active development team and as it goes from release to release, more capabilities are added. At certain times there will be a trade-off between speed and capabilities, although the MySQL development team intend to keep their database engine firstly fast and reliable before adding new features or levels of sophistication.

The Oracle Database was created by the Oracle Corporation and is the leading commercial RDMS; it's highly flexible, runs on many platforms and has a full and sophisticated feature set. However because of its highly tuneable nature, an Oracle database administrator (Oracle DBA) needs to be well and heavily trained to be able to get the optimal level of performance and reliability from the database management system. Oracle have pioneered many new features and are always at the forefront of database technologies, however this expertise in the market comes at a price and as a general rule Oracle databases are used for large

corporate companies with the money, power and experience to best utilise this vast feature set.

This concludes the analysis of database management systems. It is clear to see that of the two main competitors only MySQL is suitable for the HDARA. Considering the size of the web application the HDARA requires using an Oracle database would simply be over kill and the experience to setup and maintain it would simply be to greater learning curve. This as well as the fact that the vast feature set supplied by Oracle would simply not be required to run an application of this size.

To conclude I feel the research completed in this technical study has provided an excellent insight into what technologies are available and which are most viable options for the Hants and Dorset. Looking at the available technologies I feel the perfect solution for this project is to use Apache HTTP Server based on a UNIX/Linux operating system as it is open source software which has been thoroughly tested on large mission critical applications across the internet and considered a robust secure base for any web application. The programming language of choice is PHP due to it again being freely available and having a large developer community; it is also the language the developer has the highest level of expertise and experience in. Finally the database management system of choice is MySQL as it also falls in line with the open source software already being utilised and is proven to handle medium size to large size web applications securely and efficiently when combined with PHP.

These chosen technologies provide many advantages when used in conjunction with each other. Firstly all the software used is open source meaning no licence fees are required to be paid which makes hosting on this environment considerably cheaper than its direct competitors. All technologies also have large user communities that can be utilised if issues are encountered with any of the software meaning help should not be too difficult to find. Finally All the technologies specified are under constant development by their communities meaning that functionality and security updates as well as bug fixes are constantly being released free of charge, therefore each piece of software is constantly kept at the forefront of technology.

It is for these advantages that a framework has been developed specifically to cater for these technologies. This framework is known as L.A.M.P (Linux, Apache, MySQL and PHP) and provides the technology required to build and run a medium sized dynamic web application keeping performance and budget in mind.

7. Design

7.1 Logical Design

Connolly and Begg (2004) states that logical database design involves constructing a model of the information used in an enterprise based on a specific data model, but independent of a particular DBMS and other physical constraints.

7.1.1 Entity Matrix

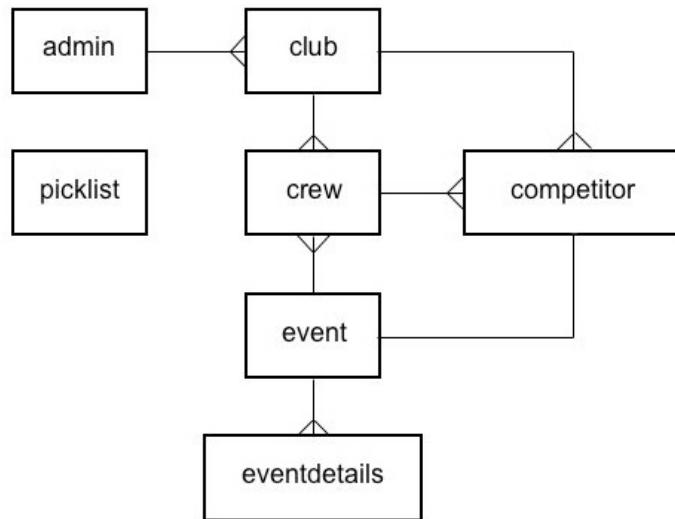
As specified by the Hants and Dorset's requirements a central store must be created where all data regarding the regatta can be stored and accessed. To allow this process to be completed the required entities were gathered from research collected during the analysis and requirements stage. The entity matrix at figure 7.1.1a shows these entities and their relationship to each other.

	Admin	Club	Crew	Competitor	Event	EventDetails
Admin		1:M				
Club			1:M	1:M		
Crew				1:M	M:1	
Competitor					1:1	
Event						1:M
EventDetails						

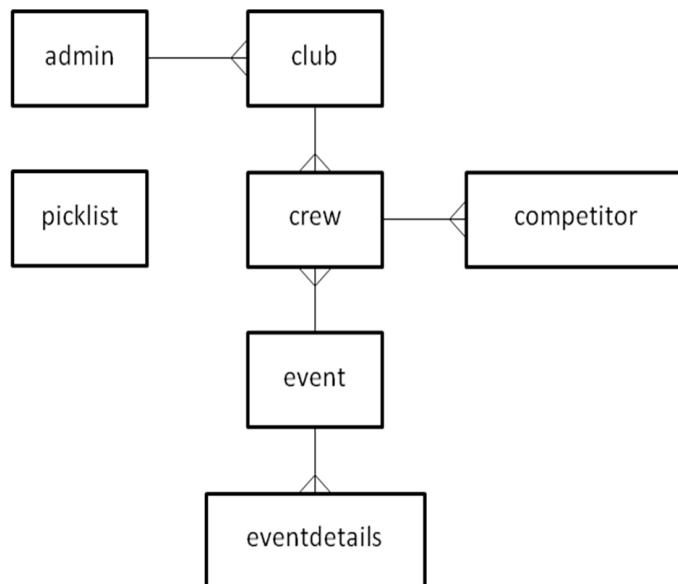
7.1.1a Entity Relationship Grid

7.1.2 Entity Relationship Diagrams

The first entity relationship diagram (figure 7.1.2a) has been created directly from the information collected during the analysis of the entity relationship grid which can be found at figure 7.1.1a. However it can easily be seen that there are two repeating relationships between the club, crew, competitor and event entities. These repeating relationships need to be resolved as they are currently un-used and inefficient. Please see figure 7.1.2b for version two of the entity relationship diagram which has resolved the repeating relationships. (Please see appendix M for further details).



7.1.2a Version One High Level ERD



7.1.2b Version Two High Level ERD

Now the required entities have been highlighted and repeating relationships have been resolved, the next stage is to identify the attributes that will be contained within each entity. Please refer to appendix N for the full data dictionary.

Admin (admin_id, username, password, admin_forename, admin_surname, admin_addressone, admin_addresstwo, admin_city, admin_county, admin_postcode, admin_phone, admin_email, admin_club, admin_level)

Club (club_id, club_name, club_association, admin_id *)

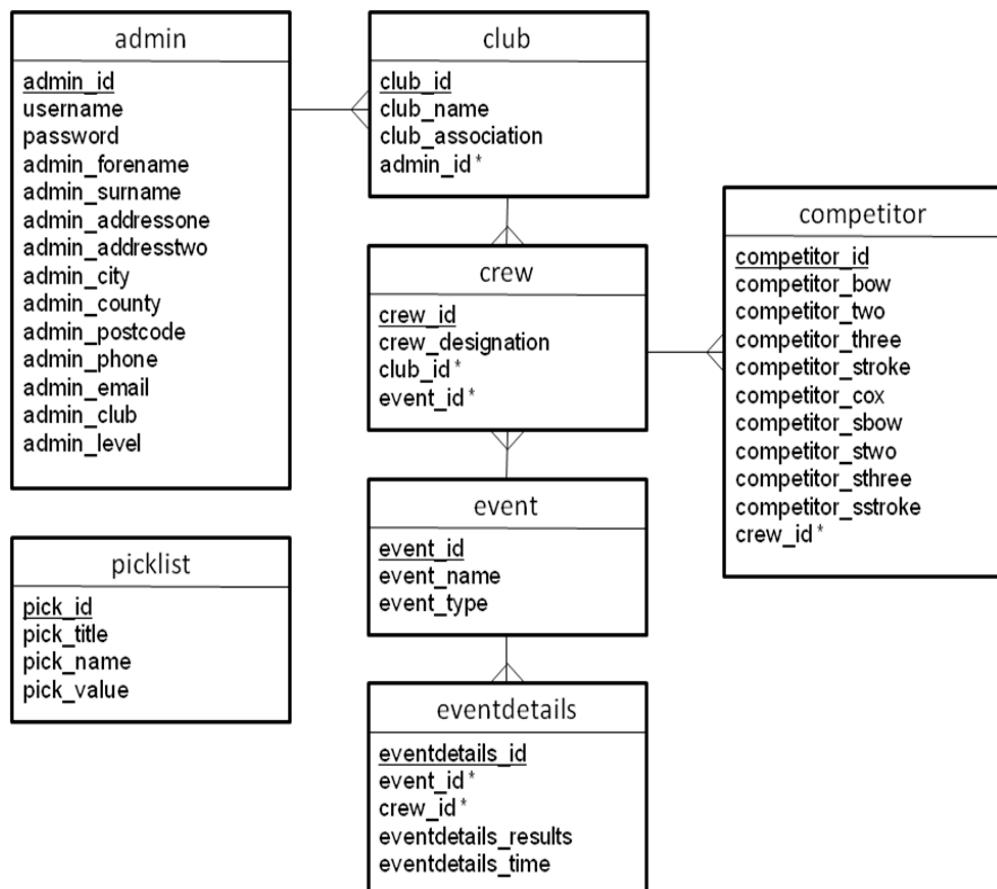
Crew (crew_id, crew_designation, club_id *, event_id *)

Competitor (competitor_id, competitor_bow, competitor_two, competitor_three, competitor_stroke, competitor_cox, competitor_sbow, competitor_stwo, competitor_sthree, competitor_sstroke, crew_id *)

Event (event_id, event_name, event_type)

EventDetails (eventdetails_id, event_id *, crew_id *, eventdetails_result, eventdetails_time)

The diagram at figure 7.1.2b is a low level entity relationship diagram which shows the entities and their attributes as well as the relationships between them. Also included on the diagram are the primary and foreign keys.



7.1.2c Low Level ERD

7.1.3 Breakdown of Iterations and User Levels

As previously mentioned in the methodology stage the design and implementation stages of this project will be handled by iterations. Now the full list of requirements have been clearly defined and analysed these iterations can be expressed in more detail. The process of splitting the design and implementation into iterations was completed using the analysis conducted at the requirements stage where dependencies and relationships were explicitly evaluated against priority rating, the requirements were then ranked in the order that they should be completed in. The separated iteration stages can be seen below -

Iteration One - This iteration will include the creation of the applications Graphical User Interface, the secure login and account management system and the rowing clubs registration process.

Iteration Two - This iteration will include the creation of the automated programme system that will take the rowing clubs registration information and split all crews into their specific events.

Iteration Three - This iteration will include the creation of the results and timings system which will allow results and times to be updated instantly as soon as the vents are complete. It will also involve the creation of the reports that will details information such as registered crews, the programme, results, times and finally rowing club and association points.

As well as the iterations being expressed the user levels that will be required by the system can now also be detailed, therefore within each of these iterations the design and implementation will have to consider three types of user that can interface with the application (as specified in the requirements). These user types are Standard User (no login required), Full Administrator (Hants and Dorset committee members) and finally Club Administrator (rowing clubs secretaries).

7.1.4 Application Structure

The final stage of the logical design considers how the web application is going to be designed and navigated. Brinck, Gergle and Wood (2002) state that navigation disorientation is among the biggest frustration for web users, because of this I have attempted to create a structure with clear navigation models that are consistent throughout the application.

The below diagrams show the full layout of the system for each user type as expressed in previous section. This overview of the page layout also helps put together the iterations showing how they link and work with each other allowing for one part of the system to be completed before the next is started.

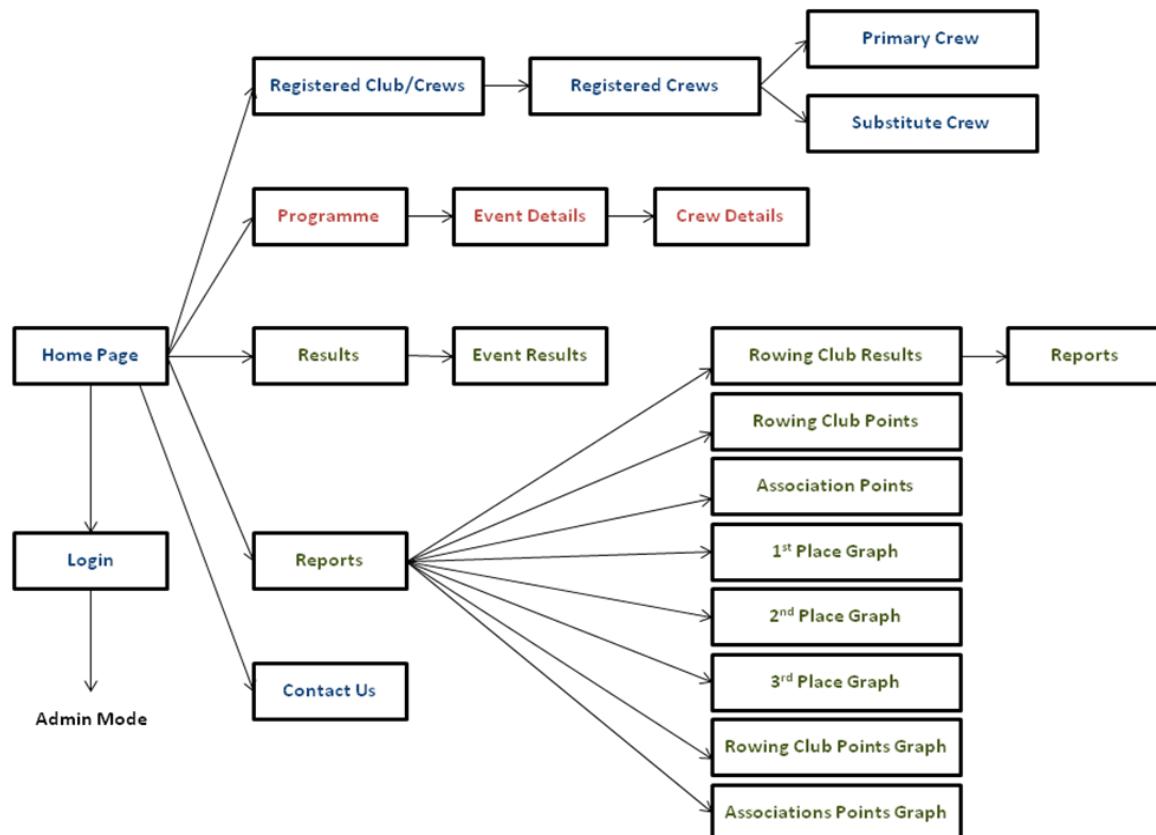
Key:

Iteration One

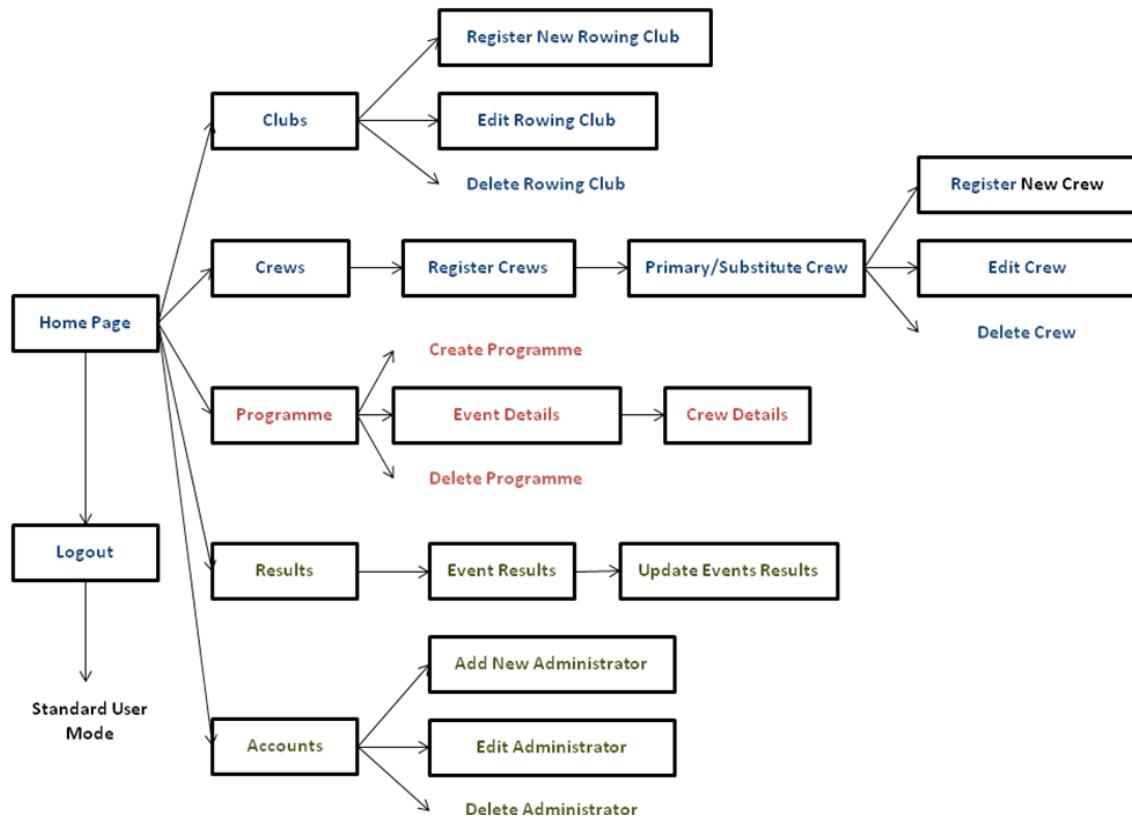
Iteration Two

Iteration Three

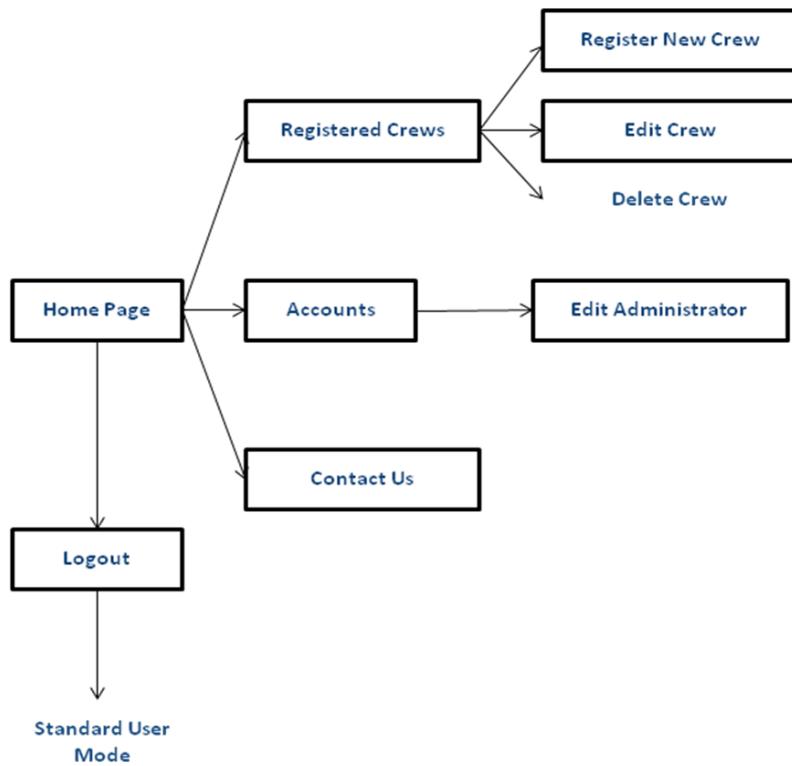
7.1.3.1 Standard User Structure



7.1.3.2 Full Administrator Structure



7.1.3.3 Club Administrator Structure



7.2 Physical Design

Connolly and Begg (2004) states the physical design of a system involves the implementation of the logical design outlined in the previous section. The database design, application structure and requirements will form the basis of this development.

7.2.1 Usability Heuristics

Nielsen (1990) a pioneer in heuristic evaluation developed a list of ten usability heuristics. Although these heuristics predate the popularity of the web much of what was written is still considered very valuable and Pearrow (2000) agrees that the guidelines provided by these ten heuristics should be closely followed when designing web applications. Please refer to appendix O for an analysis of these ten heuristics.

As a summary the ten heuristics evaluated are -

- Visibility of system status.
- Match the system to the real world.
- User control and freedom.
- Consistency and standards.
- Error prevention.
- Recognition rather than recall.
- Flexibility and efficiency of use.
- Aesthetics and minimalist design.
- Help users recognize, diagnose and recover from errors.
- Help and documentation.

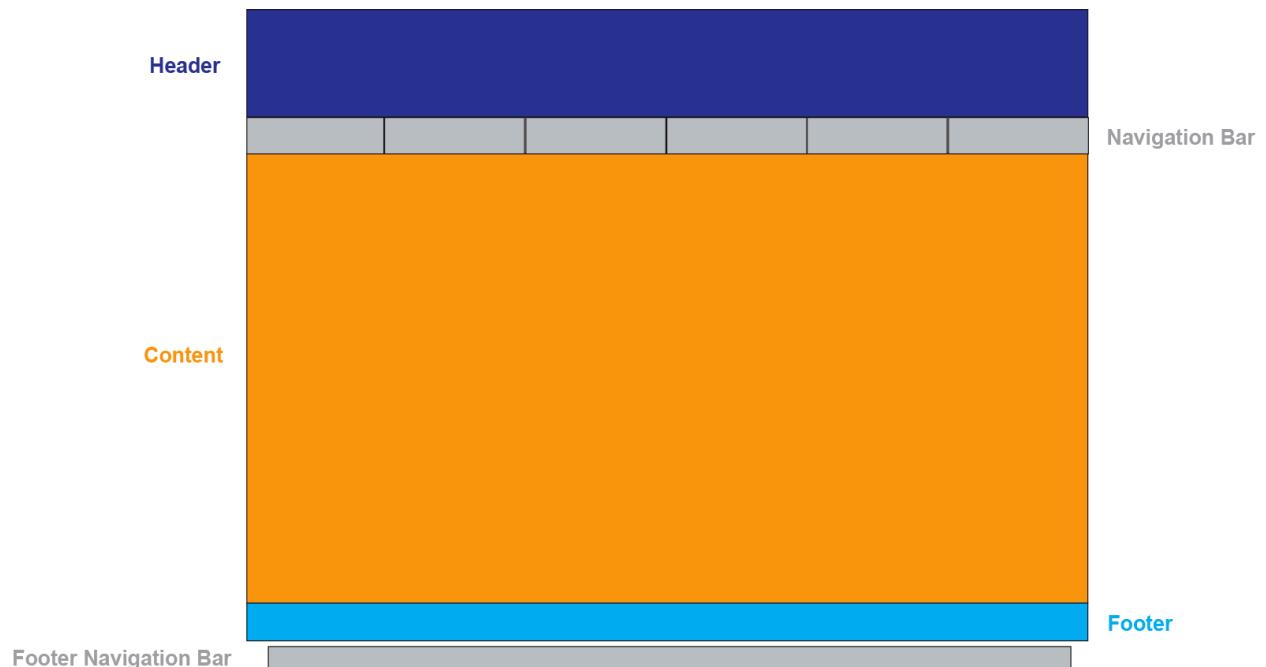
The design process for this project will be based around and analysed against these ten heuristics.

7.2.2 GUI Design

Many meetings with the HDARA committee have been conducted which has helped build-up an overview of what they expect from the system aesthetically. Using this information and in accordance to SSADM five template designs were put together. The five designs were created using web examples and information collected from two main sources, Usability for

the Web, Brinck. et al (2002) and Web Site Usability, Pearrow (2000). They were also designed to take into consideration the 10 usability heuristics previously detailed. Please refer to appendix P for the five template designs and reference web applications.

After considerable deliberation and minor tweaking of the template designs a final template was chosen which can be seen at figure 7.2.2a.



7.2.2a Final Template GUI Design

This template is both simple and clear. It provides quick and obvious access to navigation links via the navigation bar and has a bold wide area for content ensuring text and pictures can be clearly displayed. The navigation bar is also mimicked at the bottom of the application in the footer navigation bar to ensure fast and easy access to anywhere in the system. This template covers all aspects of the Hants and Dorset's requirements and ensures that all aesthetic and usability heuristics are upheld.

The screen shot at figure 7.2.2b of an example web site (www.theregister.com) that uses a similar template to the chosen final design.

The screenshot shows the homepage of The Register. The Header is a green bar with the site's logo and navigation links for Hardware, Software, Music & Media, Comms, Security, Management, Science, Odds & Sods, Operating Systems, Applications, and Enterprise. The Navigation Bar below it includes links for The Register, Software, Operating Systems, Applications, and Enterprise. The Content area features a news article titled "Analysts look both ways at Vista" by Gavin Clarke, published on Tuesday 28th November 2006 17:13 GMT. The article discusses analyst predictions for Windows Vista's adoption rate compared to Windows XP. A Novell advertisement is visible on the right.

7.2.2b Example Web Site (www.theregister.com)

As you can see the example web site allows for a clear easy structure with a large content area for information to be displayed. The register is a technology news site that deals with high quantities of information therefore is the perfect example showing the benefits of a clear large content area.

7.2.3 System Design

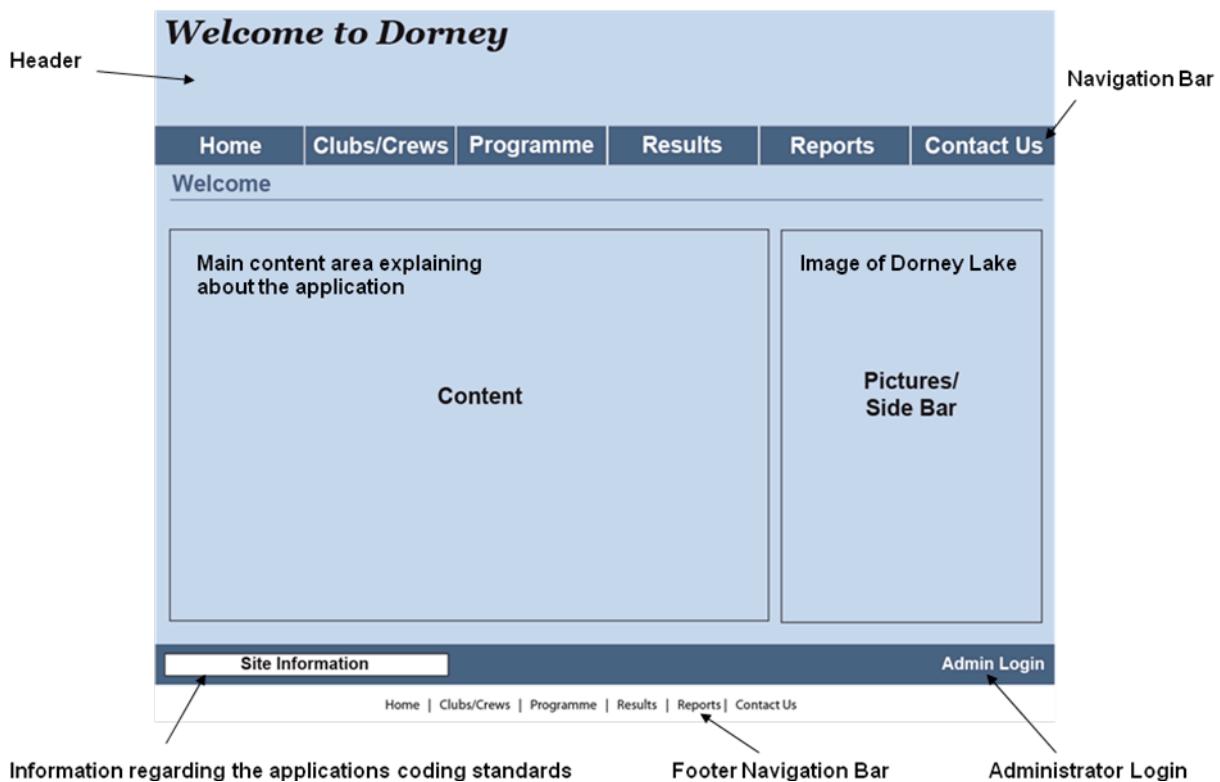
Using the chosen GUI template and system structure previously created the applications look and feel can begin to be designed as it is important to understand what each page of the system will look like and what it will allow the user to do. At this point the developer decided to create a complete mock-up of the system to allow the Hants and Dorset committee to see how the system will look, function and link together. These designs will also allow for any aesthetic or structural changes the Hants and Dorset committee may require before coding actually begins as it will be much easier to make changes at this stage.

The following sections detail the final designs for the three iterations and within them the designs for each user type (please refer to appendix Q for examples of the original draft system designs). Not only will the aesthetics and layout of the page be shown but also key algorithms or conceptual ideas will be expressed to help the understand how the application will function. Only specific pages that are of value to the system or deemed important will be shown throughout these sections and any recurring pages for example for different user types

will be ignored. These designs will constantly strive to uphold the heuristic values previously detailed.

7.2.3.1 Standard User Iteration One Designs

The first page a user will hit when the web application is loaded is the standard users (logged out) homepage. This page can be regarded as the navigation hub for the user and supplies them with general information about the regatta and the application. It also offers navigational guidelines to help the user operate the application. It is clear to see from the design below (7.2.3.1a) the previously detailed GUI template being utilised within the home page. The navigation bar as well as footer navigation are both present displaying the available options to the standard user.



7.2.3.1a Standard User Home Page

Iteration one includes the functionality for the rowing clubs to register their crews. The standard user has no option to add crews although does have options to view which crews have already been registered with the system. This is done by selecting “Clubs/Crews” from the navigation bar which will display a list of registered rowing clubs and from there a list of

their registered crews. The two designs at figure 7.2.3.1b and c show this process and detail key features of the individual pages.

Welcome to Dorney

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

Registered Clubs

Information about how to use the page

Rowing Club	Association	Administrator	Control Options
Ryde	HDARA	James Bond	[View Registered Crews]
Poole	HDARA	John Smith	[View Registered Crews]
Bournemouth	HDARA	Jack Bauer	[View Registered Crews]
Castle Dore	WEARA	Clark Kent	[View Registered Crews]
Hastings	CARA	Rocky Balboa	[View Registered Crews]
Eastbourne	CARA	Peter Parker	[View Registered Crews]
Plymouth	WEARA	Jason Bourne	[View Registered Crews]

To report an issue or for help please click [here](#).

Site Information

Address:
MI6 / SIS
PO Box 1300
London SE1 1BD
England

E-mail:
jbond@email.com

Phone:
07476235007

To be sent to a contact form click [here](#)

When administrator name is highlighted with mouse cursor popup appears.

Click here to view the registered crews for the specific rowing club.

7.2.3.1b Standard User Registered Rowing Clubs

Welcome to Dorney

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

Registered Crews

Information about how to use the page

Event	Type	Bow	Two	Three	Stroke	Bow
MS4x A	Championship	James Bond				
MS4x B	Championship	John Smith				
MJS4x A	Championship	Jack Bauer				
MN4x A	Invitation	Clark Kent				
WS4x A	Championship	Rocky Balboa				
WJ4x A	Championship	Peter Parker				
WN4x A	Invitation	Jason Bourne				

[View Substitute Crews]

To report an issue or for help please click [here](#).

Site Information

Admin Login

Event/crew designation

Event Type

Competitors names/positions

View Substitute Crews

7.2.3.1c Standard User Registered Crews

The final page of interest for the standard user as part of iteration one is the administrator login page (figure 7.2.3.1d). This page can be accessed from any page in the system at the bottom right corner. The page will allow registered administrators to login to the secure part of the system, however only display options to them that their level dictates. For example club administrators will have restricted access to only their own rowing clubs information, whereas full administrators will have full and complete un-restricted access to all information held by the system.

Welcome to Dorney

Administrator Login

This administration section will allow Rowing Club Secretaries to register their club and crews online. As well as offer additional useful tools.

Please login below using your username and password.

Username

Password

Login

Picture

To report an issue or for help please click [here](#).

Site Information

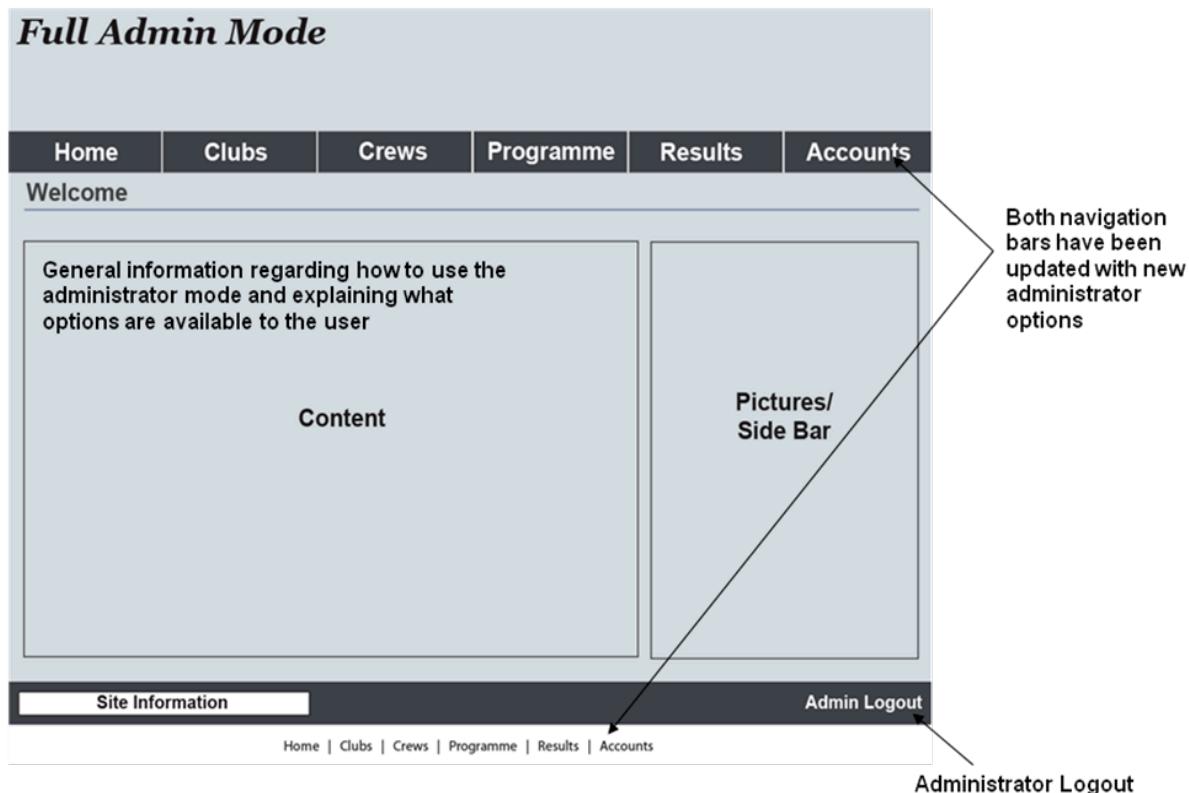
[Home](#) | [Clubs/Crews](#) | [Programme](#) | [Results](#) | [Reports](#) | [Contact Us](#)

7.2.3.1d Standard User Login

7.2.3.2 Full Administrator Iteration One Designs

Once logged in the full administrator will be presented with their specific home page. This page will have specific navigation options for this user level and as with the standard user homepage act as a hub for navigation and help. Taking into consideration usability and the lack of technical knowledge of the Hants and Dorset committee members a different theme (colour scheme and header) will be displayed when a user enters administrator mode. This is to visually warn the user that they are in a mode where system wide changes can be made which will affect the system as a whole. This theme will be consistent through the administrator mode and only be disabled when the user logs out. This change of style will

likely be best handled by the applications style sheet as it will offer the quickest and lightest way for the system to change theme. The design at figure 7.2.3.2a shows the result of the style sheet theme change for the full administrators home page.



7.2.3.2a Full Administrator Home Page

Iteration one allows the full administrator to register rowing clubs to the system and assign club administrators (rowing club secretaries) to these rowing clubs. This will then allow the club administrator to log into the system and register their crews for the regatta. As the full administrator has full unrestricted access they have the ability to register crews on behalf of any of the registered rowing clubs. However the designs for this section of the system will not be show here as they are similar in design to the club administrator register crews page. The two designs at 7.2.3.2b and 7.2.3.2c show the register rowing clubs page and the assign/create administrator page. It is important to understand at this stage that administrators can only be added to rowing clubs currently registered with the system as the drop down box will be populated from the rowing clubs registration information.

Enter new rowing clubs name - once finished the administrator setup page will automatically be updated

Full Admin Mode

Home | Clubs | Crews | Programme | Results | Accounts

Register Rowing Club

Information about how to use the page

Rowing Club Name:

Association:

Finished

Select rowing clubs association from drop down box

To report an issue or for help please click [here](#).

Admin Logout

7.2.3.2b Full Administrator Rowing Registration

Full Admin Mode

Home | Clubs | Crews | Programme | Results | Accounts

Add Administrator

Please complete the fields below and click "finished" when finished.

Information input fields

Double check completed on the password field

Username:

Password:

Repeat Password:

Forename:

Surname:

E-Mail:

Address Line One:

Address Line Two:

City:

County:

Postcode:

Phone:

Rowing Club:

Administrator Level:

Cancel

Finished

Information in the drop down box is updated from the registered rowing clubs

Click this button to submit the information and return to the previous page

Admin Logout

7.2.3.2c Full Administrator Add Administrator

7.2.3.3 Club Administrator Iteration One Designs

The club administrators home page will be similar in design to the full administrators home page, it will include the same theme however utilise a different set of navigation options as the club administrator only has restricted access to the system. The only options the club administrator has is to edit their own account details and register their crews and competitors for the regatta. They have un-restricted access to this information however have no ability to change for example there admin level, registered rowing club or any information regarding other rowing clubs or regatta information. The two screen designs at 7.2.3.3a and 7.2.3.3b show the edit administrator options and register crew page.

Club Admin Mode

[Home](#) [Register Crews](#) [Accounts](#) [Contact Us](#)

Edit Administrator

Please update the fields below and click "finished" when finished.

Username:	Address Line One:
<input type="text" value="jbourne"/>	<input type="text" value="71 Treadstone Road"/>
Password:	Address Line Two:
<input type="password" value="*****"/>	<input type="text" value="Medusa"/>
Repeat Password:	City:
<input type="password" value="*****"/>	<input type="text" value="Bournemouth"/>
Forename:	County:
<input type="text" value="Jason"/>	<input type="text" value="Dorset"/>
Surname:	Postcode:
<input type="text" value="Bourne"/>	<input type="text" value="BH9 1SW"/>
E-Mail:	Phone:
<input type="text" value="jbourne@email.com"/>	<input type="text" value="07465836478"/>

[Admin Logout](#)

[Home](#) | [Clubs](#) | [Crews](#) | [Programme](#) | [Results](#) | [Accounts](#)

7.2.3.3a Club Administrator Edit Account

Club Admin Mode

Home	Clubs	Crews	Programme	Results	Accounts
----------------------	-----------------------	-----------------------	---------------------------	-------------------------	--------------------------

Register Crew

Please add crew information below.

Regatta <input type="text" value="Southcoast"/> <input type="button" value="▼"/>	Primary Competitors Bow <input type="text"/>	Substitute Competitors Bow <input type="text"/>
Crew / Event <input type="text" value="MS4x"/> <input type="button" value="▼"/>	Two <input type="text"/>	Two <input type="text"/>
Designation <input type="text" value="A"/> <input type="button" value="▼"/>	Three <input type="text"/>	Three <input type="text"/>
	Stroke <input type="text"/>	Stroke <input type="text"/>
	Cox <input type="text"/>	Cox <input type="text"/>

New Field

Back to Registered crews page

Reset all fields

Information input fields

Back **Next**

Cancel **Finished**

Admin Logout

Finished and Save

[Home](#) | [Clubs](#) | [Crews](#) | [Programme](#) | [Results](#) | [Accounts](#)

7.2.3.3b Club Administrator Register Crew

7.2.3.4 Standard User Iteration Two Designs

Iteration two is primarily concerned with the automatic programme generation. As with all standard user options the programme can only be viewed from this mode and not changed in anyway. The three designs from 7.2.3.4a onwards show the programme viewing page and sub pages. It operates in a step by step process by first selecting an event then providing the option to select a crew to view the specific competitors. It is important to note that the events shown are only events that already have crews entered.

Welcome to Dorney

[Home](#) | [Clubs/Crews](#) | [Programme](#) | [Results](#) | [Reports](#) | [Contact Us](#)

Programme

Information about how to use the page

Event Name	Event Type	Control Options
MS4x	Championship	[View Event Details]
MJS4x	Championship	[View Event Details]
MJ4x	Championship	[View Event Details]
WS4x	Championship	[View Event Details]
MS4x	Invitation	[View Event Details]
MJS4x	Invitation	[View Event Details]
MJ4x	Invitation	[View Event Details]

List of events.
(Only events with crews entered are shown)

To view which crews are entered

To report an issue or for help please click [here](#).

[Site Information](#)

[Admin Login](#)

[Home](#) | [Clubs/Crews](#) | [Programme](#) | [Results](#) | [Reports](#) | [Contact Us](#)

7.2.3.4a Standard User View Programme

Welcome to Dorney

[Home](#) | [Clubs/Crews](#) | [Programme](#) | [Results](#) | [Reports](#) | [Contact Us](#)

Event Details - MS4x Championship

Event Name/Type

Information about how to use the page

Event Name	Control Options
Ryde A	[View Crew Details]
Bournemouth A	[View Crew Details]
Poole A	[View Crew Details]
BTC A	[View Crew Details]
Hastings A	[View Crew Details]
Eastbourne A	[View Crew Details]
Castle Dore A	[View Crew Details]

List of crews entered in the event.

To view competitors

To report an issue or for help please click [here](#).

[Site Information](#)

[Admin Login](#)

[Home](#) | [Clubs/Crews](#) | [Programme](#) | [Results](#) | [Reports](#) | [Contact Us](#)

7.2.3.4b Standard User View Programme Details

Welcome to Dorney

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

Crew Details

	Bow	Two	Three	Stroke	Cox
Primary Competitors	John Smith	James Bond	Rocky Balboa	Jason Bourne	Ethan Hunt
Substitute Competitors	Clark Kent	Greg House	Peter Parker	Dave Lister	Arnold Rimmer

List of primary competitors
List of substitute competitors

[Back To Events](#)

To report an issue or for help please click [here](#).

[Site Information](#) [Admin Login](#)

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

[Return to events list](#)

7.2.3.4c Standard User View Crew Details

7.2.3.5 Full Administrator Iteration Two Designs

The full administrator has access to several options regarding the programme. They have the option to simply view the programme in a similar method to the standard user however they also have the ability to create the programme. Based on the analysis of the existing system in place at the Hants and Dorset it is clear that this process has always been a time consuming pain to complete. This issue is now resolved by the system as the programme can be generated by simply selecting one button. Once this button is clicked the system will execute a process that goes away and selects all the rowing clubs and their registered crews. It then sorts these crews into their specific event along with their appropriate competitors. However it is at this stage where this sorted information is written back to the database building the content of a new table that can later be used to store results and times next to the specific crews. Please see figure 7.2.3.5a for the pseudo code of this execution -

Select all rowing clubs, crews and competitors
 Sort crews by event type and display via rowing club name and crew designation
 Remove any data from EventDetails table to ensure recurring data is not added
 Populate EventDetails table with sorted data allowing for results to be added at a later date

7.2.3.5a Pseudo Code

The design at figure 7.2.3.5b is the programme management page which includes the option to generate the programme. There is also an option to delete programme.

Full Admin Mode

Home	Clubs	Crews	Programme	Results	Accounts
-------------	--------------	--------------	------------------	----------------	-----------------

Programme Management

Please select a control option below.

Create programme → [Create Programme](#)

Delete programme → [Delete Programme](#)

View created programme → [View Programme](#)

Pictures/ Side Bar

For help using this page please click [here](#) to view the help file.
 To report an issue or for help please click [here](#).

Admin Logout

[Home](#) | [Clubs](#) | [Crews](#) | [Programme](#) | [Results](#) | [Accounts](#)

7.2.3.5b Full Administrator Programme Management

7.2.3.6 Standard User Iteration Three Designs

The final iteration caters for real time result creation and report generation. As previously stated the standard user will not have access to make any changes to the data only view it. The results will be viewed by event type, however only events with results will be displayed on the page. The two designs at 7.2.3.6a and 7.2.3.6b show the results pages.

Welcome to Dorney

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

Results

Information about how to use the page

Event Name	Event Type	Control Options
MS4x	Championship	[View Event Results]
MJS4x	Championship	[View Event Results]
MJ4x	Championship	[View Event Results]
WS4x	Championship	[View Event Results]
MS4x	Invitation	[View Event Results]
MJS4x	Invitation	[View Event Results]
MJ4x	Invitation	[View Event Results]

To report an issue or for help please click [here](#).

Site Information Admin Login

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

7.2.3.6a Standard User Results

Welcome to Dorney

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

Results - MS4x Championship

Information about how to use the page

Result/Position	Rowing Club/Crew	Time
1st	Ryde A	09:12:33
2nd	Ryde B	09:12:42
3rd	Poole A	09:14:12
4th	Bournemouth A	09:14:52
5th	Hastings A	09:18:06
6th	Deal A	09:22:31
7th	Plymouth A	09:30:08

[Back](#)

To report an issue or for help please click [here](#).

Site Information Admin Login

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

7.2.3.6b Standard User Results Details

7.2.3.7 Full Administrator Iteration Three Designs

The final iteration for the full administrator allows the user to update the results of the events as they happen. These changes will effect the entire system instantly meaning any standard user viewing the system will see the updates as they happen. The designs from figure 7.2.3.7a onwards show the process of adding or updating these results.

Full Admin Mode

The screenshot shows a web-based administration interface titled "Full Admin Mode". The top navigation bar includes links for Home, Clubs, Crews, Programme, Results, and Accounts. Below this, a sub-navigation bar highlights the "Results" link. The main content area is titled "Information about how to use the page" and displays a table of events:

Event Name	Event Type	Control Options
MS4x	Championship	[View/Add/Update Event Results]
MJS4x	Championship	[View/Add/Update Event Results]
MJ4x	Championship	[View/Add/Update Event Results]
WS4x	Championship	[View/Add/Update Event Results]
MS4x	Invitation	[View/Add/Update Event Results]
MJS4x	Invitation	[View/Add/Update Event Results]
MJ4x	Invitation	[View/Add/Update Event Results]

Annotations on the right side of the table explain the columns:

- "List of results (Only events with results will be shown here)" points to the first column.
- "View, add or update events results" points to the third column.

Below the table, a link "To report an issue or for help please click [here](#)". At the bottom, there is a dark footer bar with the "Admin Logout" link and a navigation bar with links for Home, Clubs, Crews, Programme, Results, and Accounts.

7.2.3.7a Full Administrator Results

Full Admin Mode

Home Clubs Crews Programme Results Accounts

Results - MS4x Championship ← Event Name/Type

Information about how to use the page

Result/Position	Rowing Club/Crew	Time	Control Options
1st	Ryde A	09:12:33	[Add/Edit Result]
2nd	Ryde B	09:12:42	[Add/Edit Result]
3rd	Poole A	09:14:12	[Add/Edit Result] ←
4th	Bournemouth A	09:14:52	[Add/Edit Result]
5th	Hastings A	09:18:06	[Add/Edit Result]
6th	Deal A	09:22:31	[Add/Edit Result]
	Plymouth A		[Add/Edit Result]

[Back](#) Results Add or edit result

To report an issue or for help please click [here](#).

Admin Logout

Home | Clubs | Crews | Programme | Results | Accounts

Return to results

7.2.3.7b Full Administrator Results Details

Full Admin Mode

Home Clubs Crews Programme Results Accounts

Result Update - Plymouth A

Information about how to use the page

Rowing Club/Crew	Result/Position	Time
Plymouth A	1st	

Finished → Save changes Select crew position Input time

[Back](#) To report an issue or for help please click [here](#).

Admin Logout

Home | Clubs | Crews | Programme | Results | Accounts

Return to event results

7.2.3.7c Full Administrator Results Add/Update

8. Implementation

8.1 Choice of Technology Used

Using the research collected from the literature review the following technologies have been chosen.

Server - Linux

Web Server - Apache

Scripting/Programming Language - PHP

Database Management System - MySQL

These technologies coincide with the previously mentioned framework L.A.M.P. Please refer to appendix R for additional details of the L.A.M.P framework.

8.2 Hosting Environment

Before the implementation can be started a suitable hosting environment needs to be setup to allow for both development and the final system. There were options for the Hants and Dorset to setup and maintain their own server however the expertise and technical knowledge required to complete was simply unreasonable for this situation therefore 3rd party hosting is the most suitable option available. Research into hosting companies was completed keeping in mind the technology choices. Please refer to Appendix S for hosting analysis. This analysis resulted in Netpivotal being chosen as a hosting environment as it offers what appears to be the best range of services at the most competitive price. An overview of the technology used and supported by Netpivotal can be seen below.

Server - Red Hat Enterprise Edition (Linux)

Web Server - Apache v2

Scripting/Programming Language Supported - PHP, Perl, Python, Apache ASP, Ruby on Rails.

Database Management Systems Supported - MySQL via PHPMyAdmin

Please refer to Appendix T for a full specification of Netpivotal.

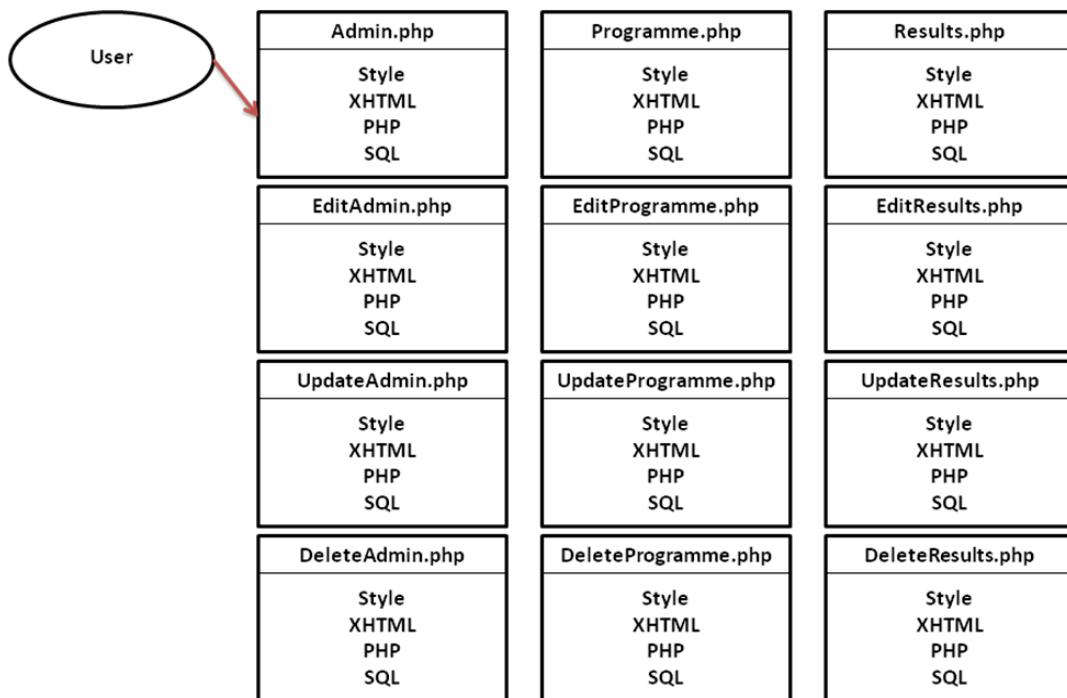
8.3 Importance of Separation of Concerns and Re-Use Code

Before the details of the system implementation are studied the developer felt it was important to mention the issues encountered when starting the build of the system. The first attempt of coding the system was mostly based upon the knowledge received from work previously completed in PHP. However during the early stages of the implementation of iteration one it became clear to that these skill were simply ineffective when coding a system of the size and complexity. The issue being that the programming was written with no separation of code, this means that all Style, XHTML, PHP and database queries for each page were being handled in one document. This resulted in two major problems, firstly each page, for example the view administrator page was huge filled with hundreds of lines of code which made any updates or troubleshooting impossible to complete. Secondly a new document was required for each page of the website, for example a separate page to view, add, edit, and delete administrators was required. This lead to an impracticable number files being created making naming conventions difficult to uphold and any form of structure to be completely lost. This problem also resulted in lots of identical code being re-written in each document, for example navigation bars were hard coded into each page even though the data was identical throughout the application. This all leading to a very inefficient process and made any updates very long winded to complete as the change would have to be made to every document. It was at this stage that it became clear that this process simply was not working and resulted in the developer delaying programming, instead turning to research in the hope to find a more efficient process. The results of the research outlined the importance of the separation of concerns. The separation of concerns states that software should be decomposed in such a way that different “concerns” or aspects of the problem at hand are solved in well-separated modules or parts of the software, Piessens (2002). This separation is completed for many reasons namely security, ease of maintenance, troubleshooting, ease of control and finally increased compatibility with other systems to name just a few. Therefore a re-write of the code using these principles was required, resulting in the code being split into three sections.

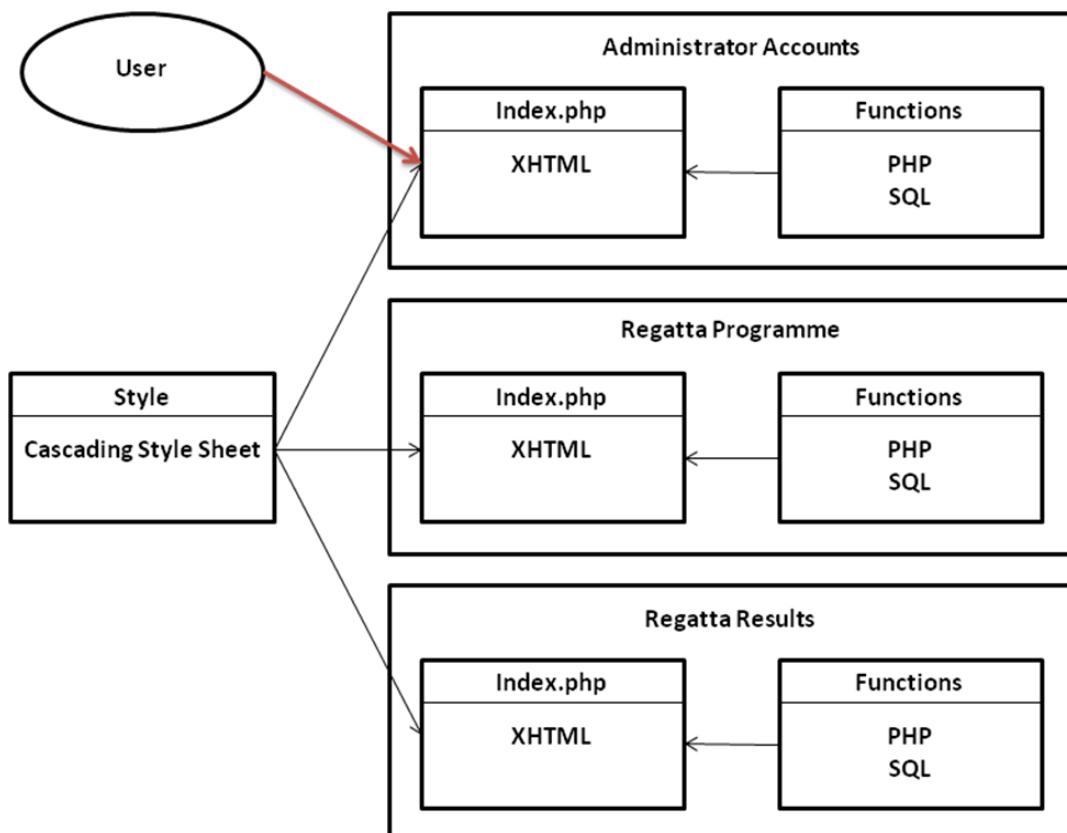
All style will now be controlled from a separate overall file for the entire system. All SQL queries and dynamic code for each page will be separated to a file that as suggested by Ullman (2003) will be named functions and finally only the XHTML will be handled in the main index page. By separating the files in this way it will allow one PHP page to complete

multiple operations for the system, for example the view, add, edit and delete administrator functionality can now be handled from one simple page that calls different functions depending on the users actions. These functions will be stored in the functions page with clear separation between the different types. On top of this all style used to generate the page will be called from a CSS file. Therefore each part of the system for example administrator accounts or programme generation will be handled by three files instead of the previously required four or five.

The following diagrams at figures 8.3a and 8.3b help display this separation of concerns and show the benefits of structure and advantages of re-use of code very clearly.



8.3a Not using Separation of Concerns



8.3b Using Separation of Concerns

8.4 Implementation of Iterations

As discussed previously (see methodology and design) the implementation of this system will be completed in three iterations.

8.4.1 Iteration 1 - GUI Creation, Multilevel User Access & Club/ Crew Registration

The first stage of this iteration was to re-create the chosen GUI design. This was completed using XHTML and CSS. There are many plus points to using CSS. Probably the mostly useful feature is that all of the style and layout is removed from the XHTML, so therefore the XHTML page size is very small. The second being accessibility as the CSS file is downloaded just once by the visitor's browser and re-used for different pages on a web site again reducing the amount of data that needs to be downloaded with each page. A final important point is consistency; CSS allows the applications layout and position of navigation to be completely constant across the entire application. For the Hants and Dorset's system two style sheets were created. One being used for standard user mode and the second being for the full and club administrator modes. The advantages for using the style sheets in this way is that a clear separation can be kept between the standard and administrator modes, ensuring differences in style between the two can be accessed and updated quickly and easily. The screen shots shown at figures 8.4.1a and 8.4.1b show the two different style sheets being used on the exact same page, therefore the XHTML and PHP for these pages are identical only the CSS changes. The first screen shot at 8.4.1a is from the Standard user mode and the second at 8.4.1b is from the Full Administrator mode.



Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Registered Clubs

The table below shows a list of all rowing clubs currently entered in the south coast championship regatta. To view further details please click "View Registered Crews" for the specific rowing club.

If you have any questions you would like to ask an administrator of a rowing club please hover over their name below for contact details.

ROWING CLUB	ASSOCIATION	ADMINISTRATOR	CONTROL OPTIONS
Poole	HDARA	Jon Bond	[View Registered Crews]
Ryde	HDARA	Steve Bull	[View Registered Crews]
Bexhill	CARA	Ollie McPhee	[View Registered Crews]
Bideford	WEARA	James Bate	[View Registered Crews]
BTC	HDARA	Chris Pettigrew	[View Registered Crews]
Hastings	CARA	Matthew Simmons	[View Registered Crews]
Eastbourne	CARA	Sarah Morris	[View Registered Crews]
Plymouth	WEARA	Nick Wells	[View Registered Crews]
Castle Dore	WEARA	James Doughty	[View Registered Crews]
Bmouth	HDARA	Chris Wilson	[View Registered Crews]

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

8.4.1a Standard User Registered Rowing Clubs



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Registered Crews

The table below shows a list of all rowing clubs currently entered in the south coast championship regatta. To view further details or enter new crews please click "View Registered Crews" for the specific rowing club.

If you have any questions you would like to ask an administrator of a rowing club please hover over their name below for contact details.

ROWING CLUB	ASSOCIATION	ADMINISTRATOR	CONTROL OPTIONS
Poole	HDARA	Jon Bond	[View Registered Crews]
Ryde	HDARA	Steve Bull	[View Registered Crews]
Bexhill	CARA	Ollie McPhee	[View Registered Crews]
Bideford	WEARA	James Bate	[View Registered Crews]
BTC	HDARA	Chris Pettigrew	[View Registered Crews]
Hastings	CARA	Matthew Simmons	[View Registered Crews]
Eastbourne	CARA	Sarah Morris	[View Registered Crews]
Plymouth	WEARA	Nick Wells	[View Registered Crews]
Castle Dore	WEARA	James Doughty	[View Registered Crews]
Bmouth	HDARA	Chris Wilson	[View Registered Crews]

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

8.4.1b Full Administrator Registered Rowing Clubs

An important and useful part of the system that is controlled through the style sheets are tables. Looking at the designs the system will obviously use a lot of tables to display information to the user. To make the information stored in the tables clear and easy to manipulate alternate colours on each row will be used. This feature can be seen in the screen shots at 8.4.1a and 8.4.1b and was created using the style sheet. The advantage being that the alternate colours theme automatically updates no matter how many rows the table has. An example of the code required to make this element operational can be seen below, both XHTML and CSS parts are shown.

XHTML

```
<table class='ViewTable'>
    <tr>
        <th>TABLE HEADER CONTENT</th>
        <th>TABLE HEADER CONTENT</th>
        <th>TABLE HEADER CONTENT</th>
    </tr>

$class = "mainAlt";

<tr class=".{$class}.">
    <td>TABLE DATA CONTENT</td>
    <td>TABLE DATA CONTENT</td>
    <td>TABLE DATA CONTENT</td>
</tr>

if ($class=='main') $class = 'mainAlt'; else $class='main';}

</table>
```

CSS

```
.ViewTable
{
    background-color: #42434B;
    width: 90%;
    border: solid 1px #d5d5d5;
    margin-left: 10px;
}

.ViewTable th
{
    background: #4E637F;
    padding-top: 5px;
    padding-left: 5px;
    padding-bottom: 5px;
    padding-right: 5px;
    color: #FFFFFF;
    font-family: verdana,arial,helvetica;
    font-size: 8pt;
    font-weight: bold;
}

.ViewTable td
{
    background: #FFFFFF;
    padding-top: 5px;
    padding-left: 5px;
    padding-bottom: 5px;
    padding-right: 5px;
    text-align: left;
}

TR.mainAlt TD ,TD.mainAlt
{
    font-family: verdana,arial,helvetica;
    font-size: 8pt;
    color: #000000;
    border: none;
    height: 10px;
    padding: 2px;
    background: #9CAF D5;
}

TR.main TD, TD.main
{
    font-family: verdana,arial,helvetica;
    font-size: 8pt;
    color: #000000;
    border: none;
    padding: 2px;
    height: 10px;
}
```

The next stage of iteration one was to create the multi-user access. This involved creating a secure login from the standard user level to allow both full and club administrators to login. It was then crucial that these users were split ensuring that club administrators do not have access to full administrator's options.

The secure login page screen shot can be seen at figure 8.4.1c as well as the two different administrator's homepages that can be accessed from this login page at figures 8.4.1d and 8.4.1e.

The screenshot shows the 'Welcome to Dorney' website. At the top, there is a banner image of a rowing team in a boat on a lake. Below the banner is a navigation bar with links: Home, Registered Clubs/Crews, Programme, Results, Reports, and Contact Us. A sub-navigation bar for 'Admin Login' is displayed, containing links for Username and Password fields, a Login button, and a link to report an issue. To the right of the login form is a smaller image of a swan on a lake. At the bottom of the page are W3C XHTML 1.0 and W3C CSS 2.0 validation logos, along with a footer navigation bar identical to the main one.

8.4.1c Standard User Login



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Welcome Matthew

Please select an option from the navigation bar above.

The headers below explain what options are available for each section of the navigation bar.

Home
This Page - (To return to this page at any time just click the home button).

Register Clubs
Allows you to enter new rowing clubs for the south coast championship regatta. This section also allows you to view, edit and delete rowing clubs that have already entered. This process must be completed before a rowing club administrator can be assigned or any crews can be entered.

Register Crews
Allows you to enter new crews for any registered rowing club. This section also allows you to view, edit and delete crews that have already entered.

Programme
Displays which crews are entered for which events and allows for the south coast championship programme to be created or modified.

Results
Allows you to enter results of the races as well view, edit and delete the results.

Administrator Accounts
Displays information and control options for the administrator accounts you have access to.

[Admin Logout](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

8.4.1d Full Administrator Home Page



Club Admin Mode

| Home | Register Crews | Administrator Account |

Welcome Jon

Please select an option from the navigation bar above.

The headers below explain what options are available for each section of the navigation bar.

Home
This Page - (To return to this page at any time just click the home button).

Register Crews
Allows you to enter new crews for the south coast championship regatta. This section also allows you to view, edit and delete crews that your rowing club have already entered.

Administrator Account
Displays information and control options for your rowing club administrator account.

[Admin Logout](#)

| Home | Register Crews | Administrator Account |

8.4.1e Club Administrator Home Page

As you can see the two administrator pages although use the same theme offer different options to the two user levels. The club administrator has only two available options to them which are to register crews for their specific rowing club or edit their account details. This security is handled through the use of session variables which carry the admin ID and Level throughout system constantly checking they have access to the page they are trying to view. If it is ever discovered that they are trying to view a page they don't have access to they will be logged out of the system and dropped back to the login page. Another important feature to note is how the navigation bar changes are utilised. Originally these options were hard coded to each page however this meant that each time an update was required every page needed modifying. Therefore the navigation bar options for all users has now been moved to a separate file which is called by each page of the system depending on the user level logged in. This means that if any navigation changes are required it can be made in one place which will instantly update the entire system, therefore being far more efficient.

The next aspect of the multi-user levels is account management. It is set so that a full administrator can edit and delete any administrator from the system or add new administrators, however the club administrator can only edit their own settings. These options for the full administrator can be seen in the screen shots at figures 8.4.1f and 8.4.1g.

The table below displays information and control options for the administrator accounts you have access to.

[\[Add Administrator\]](#)

NAME	USERNAME	ROWING CLUB	E-MAIL	LEVEL	CONTROL
Matthew Bull	mswbull	Ryde	mswbull@gmail.com	Full	[Edit] [Delete]
Jon Bond	jbond	Poole	jbond@email.com	Club	[Edit] [Delete]
Steve Bull	scbull	Ryde	scbull@email.com	Club	[Edit] [Delete]
Ollie McPhee	omcphee	Bexhill	omcphee@gmail.com	Club	[Edit] [Delete]
James Bate	jbate	Bideford	jbate@email.com	Club	[Edit] [Delete]
Chris Pettigrew	cgettigrew	BTC	cgettigrew@email.com	Club	[Edit] [Delete]
Matthew Simmons	msimmons	Hastings	msimmons@email.com	Club	[Edit] [Delete]
Sarah Morris	smorris	Eastbourne	smorris@email.com	Club	[Edit] [Delete]
Nick Wells	nwells	Plymouth	nwells@email.com	Club	[Edit] [Delete]
James Doughty	jdoughty	Castle Dore	jdoughty@email.com	Club	[Edit] [Delete]
Chris Wilson	cwilson	Bmouth	cwilson@email.com	Club	[Edit] [Delete]

To report an issue please click here.

[W3C XHTML 1.0](#) [W3C CSS 2.0](#)

Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

8.4.1f Full Administrator Account Management

Please note on this page the administrator contact information popup that appears when hovering the mouse over an administrator's name.

Please complete the fields below and click save when finished. To return to the previous page please click back.

Username: Address Line One: Registered Club:

Password: Address Line Two: Administrator Level:

Forename: City:

Surname: County:

E-Mail: Postcode:

Phone:

[Back](#)

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) [Admin Logout](#)

Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

8.4.1g Full Administrator Add Administrator

The next aspect of iteration one is the rowing club and crew registration process. For this option to work for a club administrator they must first have an account setup and registered to rowing club by a full administrator, once complete they can register crews for the regatta through the system. It is important to remember that club administrators can only register and view registered crews for their rowing club where as full administrators can view all crews and register crews on the behalf of any rowing club.

The screen shots at figures 8.4.1h and 8.4.1i show the crew registration process from a club administrators account.



The screenshot shows a web application titled "Club Admin Mode". The background features a scenic sunset over a river. The main menu includes "Home", "Register Crews", and "Administrator Account". The current page is "Registered Crews". A note says: "The table below displays information for the registered crews, the competitors shown are the **primary** competitors for each crew. To view the substitute competitors please click the link below the table." A "Register New Crew" button is present. Below the table, there is a link "[View Substitute Competitors]" and a message "To report an issue please click [here](#)". The bottom navigation bar includes links for "W3C XHTML 1.0" and "W3C CSS 2.0", and an "Admin Logout" link. The footer contains a horizontal line and the text "FINAL YEAR PROJECT 2007" followed by "Bournemouth University BSc (Hons) Business Information Technology".

EVENT/CREW	EVENT TYPE	BOW	THREE	TWO	STROKE	COX	CONTROL OPTIONS
MS4x A	Championship	Bill	Bill	Bill	Bill	Bill	[Edit] [Delete]
MJS4x A	Championship	John	John	John	John	John	[Edit] [Delete]
MJ4x A	Championship	Frank	Frank	Frank	Frank	Frank	[Edit] [Delete]
MN4x A	Championship	James	James	James	James	James	[Edit] [Delete]
MS4x A	Invitation	Leo	Leo	Leo	Leo	Leo	[Edit] [Delete]
MJS4x A	Invitation	Jon	Jon	Jon	Jon	Jon	[Edit] [Delete]
WS4x A	Invitation	Matt	Matt	Matt	Matt	Matt	[Edit] [Delete]

[View Substitute Competitors]

To report an issue please click [here](#).

W3C XHTML 1.0 W3C CSS 2.0 Admin Logout

| Home | Register Crews | Administrator Account |

8.4.1h Full Administrator Registered Crews



Club Admin Mode

| Home | Register Crews | Administrator Account |

Register Crew

Please complete the fields below and click save when finished. To return to the previous page please click back.

Crew Information	Primary Competitors	Substitute Competitors
Event	Bow	Bow
Crew Designation	Two	Two
	Three	Three
	Stroke	Stroke
	Cox	

Save

Back

W3C XHTML 1.0 W3C CSS 2.0 Admin Logout

| Home | Register Crews | Administrator Account |

8.4.1i Full Administrator Register Crew

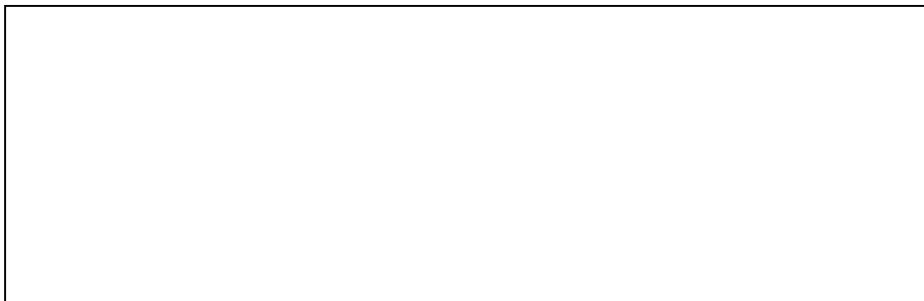
The final aspect of iteration one that requires highlighting is the use of the picklist. On multiple occasions throughout the system the user has the option to enter new or update information. This information is sometimes specific such as event type or crew designation. When information is static like this it is useful to use drop down boxes to ensure the user selects the correct option. The implementation of drop down boxes could be completed by simply hard coding the available options; however that would mean that if updates were required or new information was to be added then the code itself would have to be updated. To resolve this issue all drop down boxes used in the system are generated dynamically from the database. The information is either queried from already generated data, for example in the case of selecting a rowing club when creating a new administer account the options in the dropdown box are generated from the club table ensuring only the rowing clubs registered with the system are available as options. However it is where the options are not available

```

<option value="" name="">>Crew Designation;</option>";
$query="select * from PickList where pick_title = 'designation'";
$result=mysql_query($query, $connection);
While ($row_data = mysql_fetch_array($result))
{
    $Name = $row_data['pick_name'];
    echo"<option value='$Value' name='$Name'>$Name</option>";
}

```

~~Where the picklist table is utilised.~~ The picklist table has no relationship with the rest of the database and simply acts as data storage for drop down boxes used within the system. This method allows for fast and easy troubleshooting and maintenance. The example code at figure 8.4.1j shows how the picklist is utilised in a drop down box.



8.4.1j Example picklist Code

This concludes the implementation of iteration one. Please refer to Appendix U for full details and screen shots of the build.

8.4.2 Iteration 2 - Programme Creation

The second iteration involves the implementation of the programme generation system. This part of the system only involves the Standard User and Full Administrator users. This is because programme creation can only take place once all rowing clubs and crews registrations have taken place. As discussed in the physical design stage the full administrators programme page is designed to allow the user to simply press one button and from this to have all programme information collected from the rowing clubs registration details and automatically sorted into their specific events. However for this to work in a way that will allow results and times to be added in iteration three the programme creation has to insert this collected and sorted information into a new table. As mentioned previously the table it will be inserting this data into is the EventDetails table (see logical design for further details). The screen shot at figure 8.4.2a shows the programme management page where programme creation is possible.



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Programme Management

Please select a control option below.

[Create Programme](#)
[Delete Programme](#)
[View Programme](#)

For help using this page please click [here](#) to view the help file.
To report an issue please click [here](#).



[Admin Logout](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

8.4.2a Full Administrator Programme Management

As you can see from this screen shot at 8.4.2a the programme creation is completed by clicking one button. The code at figure 8.4.2b is the specific part that is executed by selecting this option.

```

$query="TRUNCATE eventdetails";
$result=mysql_query($query, $connection)
or die("Unable to perform query<br />$query");

$query1="select * from crew";
$result1=mysql_query($query1, $connection)
or die("Unable to perform query<br />$query1");

While ($row_data = mysql_fetch_array($result1))
{
$crew_id=$row_data["crew_id"];
$event_id=$row_data["event_id"];

$query2="select * from event where event_id = $event_id";
$result2=mysql_query($query2, $connection)
or die("Unable to perform query<br />$query2");

$row_data2 = mysql_fetch_array($result2);

$query3="insert into eventdetails values(0, '$event_id', '$crew_id', ' ', ' ')";
mysql_query($query3,$connection)
or die ("Unable to perform query<br />$query3");
}
viewprogramme();
}

```

8.4.2b Programme Creation Query Execution

As you can see from the code the EventDetails table is truncated before the sorting and insertion of data is completed. This is necessary as it may be required to run the create programme option several times which if the table was not emptied would result in duplicate data being created. This does of course mean that the user must be careful when running this process as any previously generated information will be overwritten.

Once a programme is created the results of this process can be viewed by the standard user or full administrator. The screen shot at figure 8.4.2c shows the updated programme information being accessed by the standard user.



Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Programme - Events

Please click "View Event Details" for the specific event to see the crews entered.

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View Event Details]
MJS4x	Championship	[View Event Details]
MJ4x	Championship	[View Event Details]
MN4x	Championship	[View Event Details]
WS4x	Championship	[View Event Details]
WJ4x	Championship	[View Event Details]
WN4x	Championship	[View Event Details]
MS4x	Invitation	[View Event Details]
MJS4x	Invitation	[View Event Details]
MJ4x	Invitation	[View Event Details]
MN4x	Invitation	[View Event Details]
WS4x	Invitation	[View Event Details]
WJ4x	Invitation	[View Event Details]
WN4x	Invitation	[View Event Details]

To report an issue please click here.

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

8.4.2c Standard User View Programme

Once an event is chosen they can view the crews entered in that event.



Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Programme - Event Details

Please click "View Crew Details" for the specific crew to see the competitors.

ROWING CLUB/CREW	CONTROL OPTIONS
Ryde A	[View Crew Details]
Poole A	[View Crew Details]
Bexhill A	[View Crew Details]
Bexhill B	[View Crew Details]
Bideford A	[View Crew Details]
BTC A	[View Crew Details]
BTC B	[View Crew Details]
Hastings A	[View Crew Details]
Eastbourne A	[View Crew Details]
Plymouth A	[View Crew Details]
Castle Dore A	[View Crew Details]
Bmouth A	[View Crew Details]

Back

To report an issue please click here.

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

8.4.2d Standard User View Programme Details

This concludes the implementation of iteration two. Please refer to Appendix V for full details and screen shots of the build.

8.4.3 Iteration 3 - Result Entry & Reports

The final iteration involved the implementation of the results and reporting processes. This iteration again only involved the standard user and full administrator users. Once the regatta programme has been created the full administrator has the option to add or update results and times for the events. The screen shots from 8.4.3a through to 8.4.3c detail this process.



The screenshot shows a web application interface titled "Full Admin Mode". At the top, there is a banner image of a sunset over a body of water. Below the banner is a navigation menu with links: Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts. The "Results" link is underlined, indicating it is the active page. The main content area is titled "Results". A message at the top of this area reads: "Please click "View/Add/Update Event Results" for the specific event to view, add or update results and times. (Please note only events with crews entered are shown here.)". Below this message is a table listing events. The table has three columns: EVENT NAME, EVENT TYPE, and CONTROL OPTIONS. The events listed are:

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View/Add/Update Event Results]
MJS4x	Championship	[View/Add/Update Event Results]
MJ4x	Championship	[View/Add/Update Event Results]
MN4x	Championship	[View/Add/Update Event Results]
MS4x	Invitation	[View/Add/Update Event Results]
MJS4x	Invitation	[View/Add/Update Event Results]
WS4x	Invitation	[View/Add/Update Event Results]

At the bottom of the page, there is a link "To report an issue please click [here](#)". In the footer, there are W3C validation links for XHTML 1.0 and CSS 2.0, and a link to "Admin Logout". The footer also contains a navigation bar with links: Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts.

8.4.3a Full Administrator Results Overview



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Event Results

To add or update the result and time for a crew in this event please click "Add/Edit Result" for the specific crew.

RESULT/POSITION	ROWING CLUB/CREW	TIME	CONTROL OPTIONS
1st	Ryde A	09:18:36	[Add/Edit Result]
2nd	Bexhill A	09:18:38	[Add/Edit Result]
3rd	Bmouth A	09:18:42	[Add/Edit Result]
4th	Castle Dore A	09:19:12	[Add/Edit Result]
5th	Plymouth A	09:19:32	[Add/Edit Result]
6th	BTC A	09:19:39	[Add/Edit Result]
7th	BTC B	09:19:42	[Add/Edit Result]
8th	Eastbourne A	09:19:55	[Add/Edit Result]

[Back](#)

To report an issue please click [here](#).

[Admin Logout](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

8.4.3b Full Administrator Event Results



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Result Update

Please update the crews result and time below and click Save when finished.

ROWING CLUB/CREW	RESULT	TIME
Ryde A	1st	09:18:36

To report an issue please click [here](#).

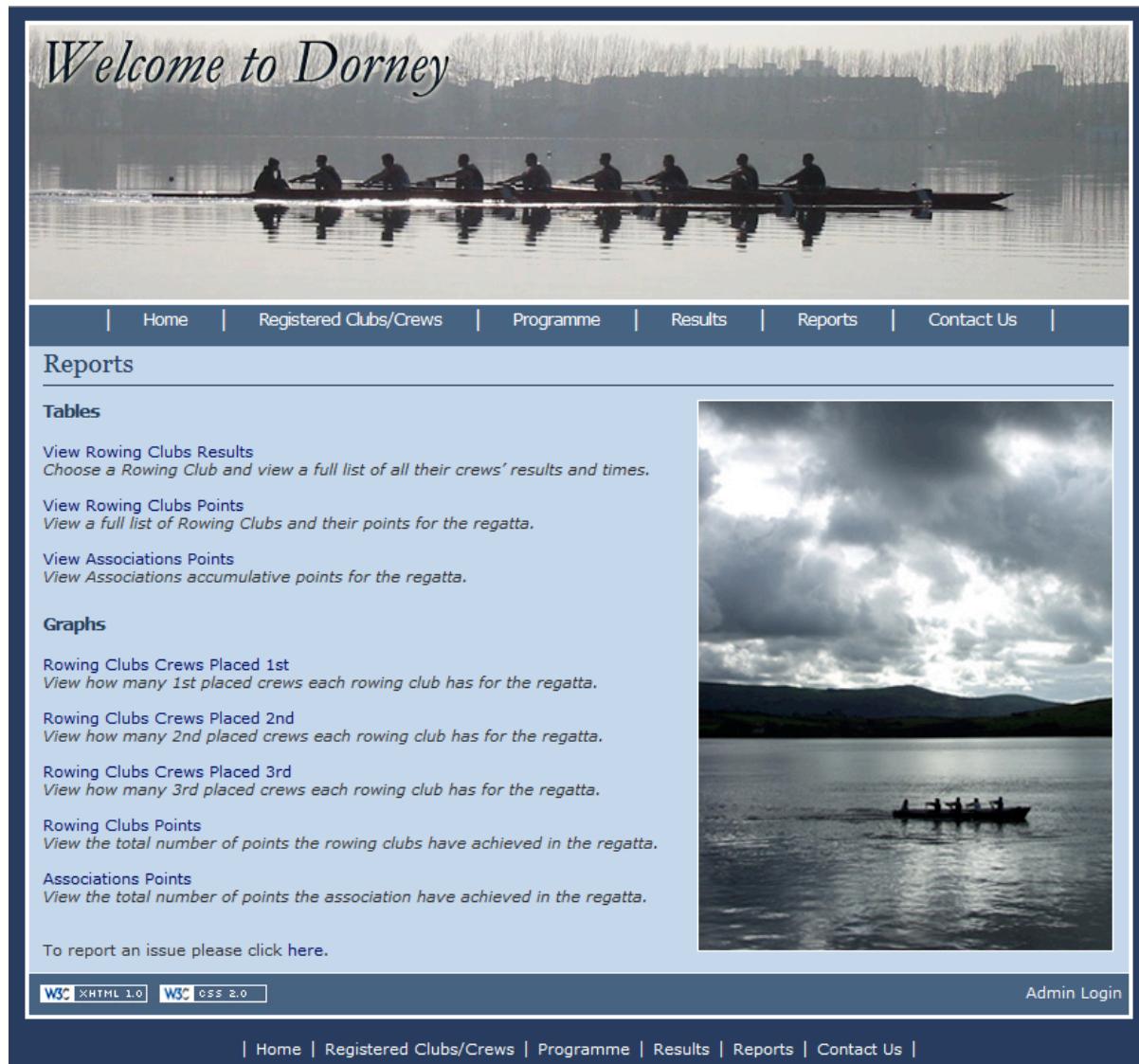
[Admin Logout](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

8.4.3c Full Administrator Add/Update Result

Once the results have been added or changed they will instantly be updated throughout the rest of the system.

The next stage of iteration three is reporting. The reporting aspect of the system is very important as from a standard user perspective it will likely be the most used section. The screen shot at figure 8.4.3d shows the main reporting page.



The screenshot displays a website for a rowing regatta. At the top, a banner features the text "Welcome to Dorney" over a background image of a rowing team in a boat on a lake. Below the banner is a navigation bar with links: Home, Registered Clubs/Crews, Programme, Results, Reports, and Contact Us. A secondary navigation bar below the first one is labeled "Reports". Under the "Reports" heading, there are two sections: "Tables" and "Graphs". The "Tables" section contains links to "View Rowing Clubs Results" (described as viewing a full list of crews' results and times), "View Rowing Clubs Points" (described as viewing a full list of clubs and their points for the regatta), and "View Associations Points" (described as viewing associations' accumulative points for the regatta). The "Graphs" section contains links to "Rowing Clubs Crews Placed 1st" (described as viewing how many 1st placed crews each club has), "Rowing Clubs Crews Placed 2nd" (described as viewing how many 2nd placed crews each club has), "Rowing Clubs Crews Placed 3rd" (described as viewing how many 3rd placed crews each club has), "Rowing Clubs Points" (described as viewing the total number of points clubs have achieved), and "Associations Points" (described as viewing the total number of points associations have achieved). To the right of the "Tables" section is a smaller image of a rowing team in a boat on a cloudy day. At the bottom of the page, there are links for "Admin Login" and "W3C XHTML 1.0" and "W3C CSS 2.0" validation, along with a footer navigation bar identical to the main one.

8.4.3d Standard User Reports

The table's reports are created by querying specific fields from the database. These fields are allow for only a refined amount of data to be shown, therefore cutting out unwanted information. For example the rowing clubs results allow you to pick a rowing and see just

their crew's results from the regatta. Figure 8.4.3e shows the report running against Ryde rowing club.



Welcome to Dorney

Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Reports - Rowing Clubs Results

EVENT	ROWING CLUB/CREW	RESULT/POSITION	TIME
MS4x	Ryde A	1st	09:18:36
MJS4x	Ryde A	1st	09:17:31
MJ4x	Ryde A	2nd	09:19:39
MN4x	Ryde A		
MS4x	Ryde A	2nd	09:20:20
MJS4x	Ryde A		
WS4x	Ryde A		

[Back](#)

To report an issue please click [here](#).

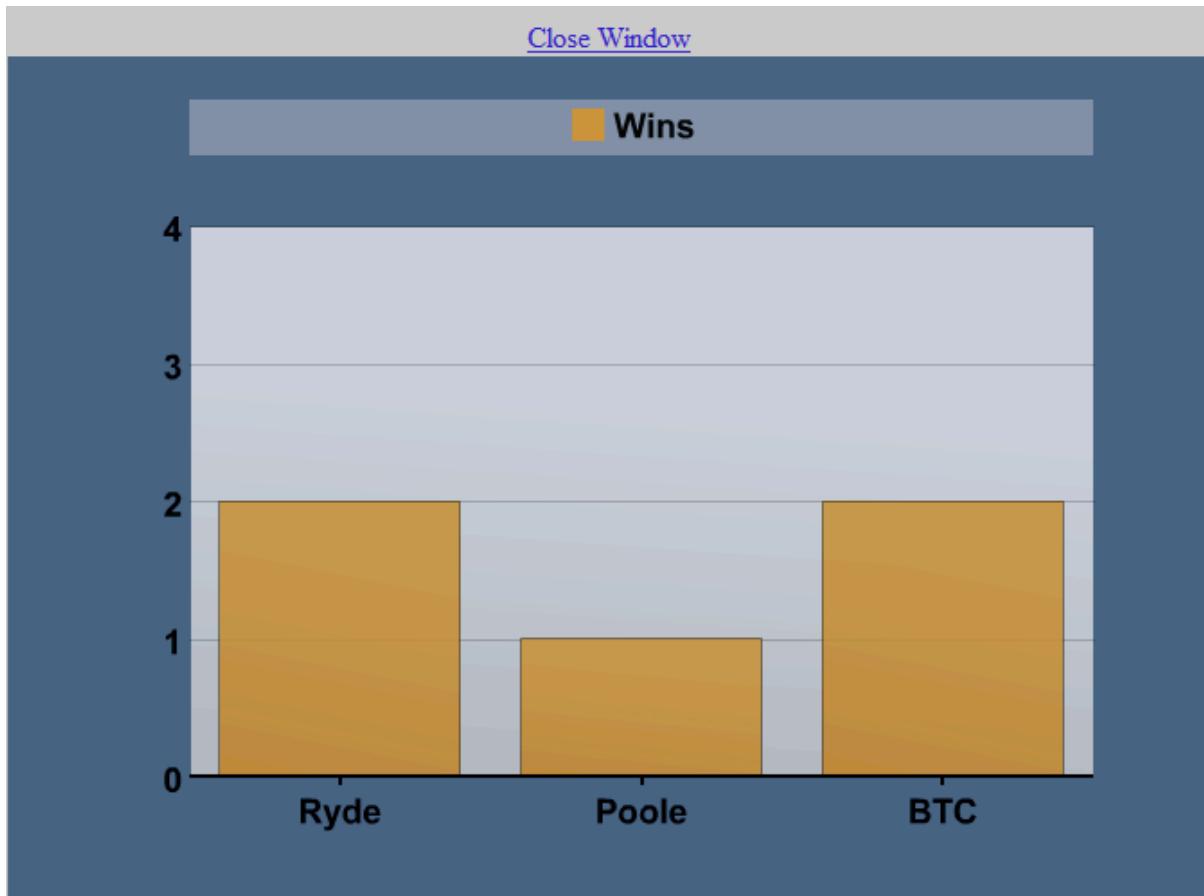
[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

8.4.3e Standard User Ryde Rowing Clubs Regatta Results

The graphs section of the reports page uses freely available tool known as XML/SWF Charts. This chart software allows graphs to be plotted using XML which provides flexible data generation and flash which gives the best quality graphics. However unfortunately this graph plotting tool is designed to deal with static data and therefore required a heavy re-write to allow the data to be queried from the database.

The final screen shot at figure 8.4.3f shows the graph displaying the number of 1st placed crews each rowing club has successfully achieved throughout the regatta.



8.4.3f Example Graph Showing Rowing Clubs Wins

Another report generated calculates the number of points a rowing club has achieved throughout the regatta. The points information is not stored in the database and therefore needs to be generated in real time using PHP.

This concludes the implementation of iteration three. Please refer to Appendix W for full details and screen shots of the build.

9. Testing and Integration

9.1 Aims

This section aims to outline a testing plan that encompasses all aspects of the software testing process. It is a crucial section of the project as it is at this stage that any bugs or inconsistencies need to be ironed out, if any are missed then they will pass through into the live build which could result in disaster on the regatta day. Therefore it is vitally important to the project that testing is completed thoroughly covering all aspects of the system from every available angle. Viega and McManus (2000) state the major issue with testing is that everybody cares about it, but few people actually cover it correctly in their products. The average project generally has several weeks devoted to testing, mostly in the weeks before deployment, however most software ends up behind schedule and over budget, and therefore testing is the first thing to get reduced or even cut completely.

9.2 Approach

There are many different methods to software testing each following their own guidelines and framework in an attempt to achieve quality assurance and robustness of the application. However all of these different frameworks all agree that testing must be completed on all aspects of the system from every available angle. Testing is usually completed by a team of testers made up of the developer team, customer team and sometimes other external users. By testing across many different types of user you are more likely to find all the bugs and inconsistencies as the external users who have never even seen the system before will have a different perspective on it than the developer team who have likely lived and breathed the application for many months and therefore know it inside out. Unfortunately this level of testing across many users will be difficult to complete for this project. This is because of the relatively small size and scale of the project, as the developer team is made up of just one individual and the customer (the Hants and Dorset) have limited time and resources to spend testing the application. Therefore the only choice is for the majority of the testing to be completed by the developer alone. Another issue with this is that the time it takes to test an application thoroughly will be too great for the one developer to handle, especially considering the tight time constraints of the project. Therefore the test plan will have to be very specific and specialised ensuring that the testing time is used to its fullest potential hoping to achieve the highest level of quality assurance. This will be done through carefully defining the scope of the testing.

The application is tested as a whole to determine whether the requirements have been met.

Firstly the boundaries of the testing will be restricted to the software only. This means that the **White-box Testing** Netpivotal hardware that the software is running on will not be tested, this area would usually individual pages of the application will be tested by looking at the code to require fault tolerance and load testing, however for this project due to the restrictions highlight any potential issues or errors. assumptions will be made based on the Netpivotal specifications of 99.9% uptime and a

bandwidth limit of 80GB per month that the Hants and Dorset application will be secure and reliable on this hardware.

The second boundary will be that tests for the application will only be completed once for each user type. For example if the logout button is tested from a page in the full administrator mode then the assumption will be made that all logout buttons in the full administrator mode will be working correctly. This assumption is safe to make due to the re-use of code based on the previously detailed separation of concerns. This means that the code used to logout a user will be identical no matter which page is being used therefore it is safe to say that if one is working correctly then they all will be.

Finally only two methods of official software testing will be used as the framework of the test plan, these being black-box and white-box testing. The definition of these testing methods are detailed below at figure 9.2a.



9.2a Black-box and White-box Testing

By testing using this tight scope with only specific tests being ran testing can be kept to a manageable level, however still produce worthy results ensuring quality assurance and the robustness of the applications. Please refer to appendix W for the full test plan.

9.3 Summary of Results

The test plan found at appendix W shows that all seventy four tests have all been passed as expected. There were minor issues with compatibility on some web browses however these issues have been resolved by re-coding the Cascading Style Sheet. The reason for testing not detailing many issues can be contributed to the use of iterations through the design and implementation stages of this project. This is because after each iteration was completed the developer carried out simply testing ensuring the functionality and validation of the specific iteration was working as expected. Although this testing was not completed using a specific test plan it did successfully iron out many of the bugs early in development.

9.4 Integration and User Manual

The application is being developed on the same server as it will be hosted on, therefore the integration of this application will simply involve the setup of initial administrator account and an update to the Domain Name Service (DNS) via the hosting company Netpivotal.

The developer has also prepared system documentation for the user explaining in detail how to use and manage the application, this documentation will be passed over with application to aid the handover process. Please refer to appendix X for the twenty seven page user manual and system documentation.

10.Critical Appraisal

10.1 Evaluation Against Methodology and Project Plan

The chosen methodology for this project was a combination of SSDAM and an iterative approach to design and implementation. I chose to complete the project in this way as based on my research (please refer to appendix E) as I felt the waterfall style methodologies such as SSADM do not have a detailed or clear enough structure to handle the implementation of the actual system. This can be considered a major disadvantage of the SSADM methodology and resulted in me combining it with an iterative method to combat these weaknesses, which has proven a popular choice amongst many other developers. Even Winston Royce the inventor of the original waterfall methodology ironically utilized an iterative approach to software development stating that the model now known as the waterfall model "is risky and invites failure".

I feel I was able to follow this chosen methodology very easily and concisely. The early stages of development handled by SSADM allowed for a very document-led process which gave me strict instructions on what was required as part of each stage. An example of where I felt this worked particularly well was the requirements stage as completing the requirements catalogue as specified by SSADM led to a very detailed analysis of all the functional and non-functional requirements and allowed for the relationships and dependencies of each requirement to be explicitly stated. This level of detail collected by the requirements catalogue allowed for a clear understanding of what was expected from the project and enabled later stages such as the design and implementation to draw directly on these findings. Without the requirements being completed in this way I believe the later stages of the project would have suffered greatly.

An area of the methodology that I felt was less useful yet a requirement of SSADM was the use of the unified modelling language (UML) such as data flow diagrams. I understand the importance of using UML to visually model a system and the data flowing through it, however I believe the advantages of this are only viable when dealing with large scale systems that have many processes and entities. In scenarios like this UML is very effective as it allows a system to be detailed in an easy to understand manner and also offers a simple, common and straight forward process for non-developers to follow. These advantages

however are lost for small systems as a written explanation is just as simple and easy to understand baring in mind there are not to many processes taking place. This I feel was the case for the Hants and Dorset's system as the processes being completed are relatively old and already clearly understood by the members of the Hants and Dorset committee, therefore the time spent creating data flow diagrams detailing this existing system seemed un-necessary and overly time consuming with only few benefits.

The implementation section completed using iterations I believe was a great success. This project lent itself perfectly to iterative development as the breakdown of the system allowed for aspects of it to be completed very early within the project life cycle. For example the first iteration involved the system having the user levels and segregation operational and the rowing club and crew registration process working. Therefore after the completion of this iteration I was able deliver a fully working section of the system to the Hants and Dorset. This was a great triumph as the Hants and Dorset committee were able to actually use a section of the system months before the implementation process was completed and as a result of this the Hants and Dorset were kept happy while I was able to receive valuable feedback from them about parts they liked and didn't like which could then be put into consideration throughout the next iterations.

To conclude I am pleased with the mixture of methodology I chose for this project and believe that completing it in this way allowed me to get the best of both worlds, by supplying the strict document-led process of SSADM at the start the project where it was required and then utilising an agile process for completing the design and implementation stage through iterations. I also feel the project structure flowed well from one section to the next with each following section successfully drawing upon and utilising the conclusions made in the previous section.

10.2 Evaluation Against User Requirements

The twenty requirements set out by the Hants and Dorset have all been successfully implemented in the final system (please refer to appendix J for a full list of the requirements). However this process of implementing the requirements was not without its problems. The main issue was to do with the automatic programme generation which is where the system automatically creates the regatta programme by analysing all the registered rowing clubs and

their crews and then splits these crews into their specific events. The newly sorted and split information is then updated to the EventDetails table as a set of ID's. These ID's mean nothing by themselves, but combined with other ID's build up the specific events information. This process had to be completed in this way as the data generated by the programme would also have to be used to write results and times of the events, therefore this information had to be stored physically in the database. This aspect of the system took a long time to get working, however it was a crucial requirement of the Hants and Dorset and other requirements such as results input and reports were directly dependant on its operation. It was for this reason why iteration two of the implementation stage appears to be the least amount of work when in fact it was one of the more complex areas that also required additional testing. One aspect of this requirement that was not perfectly covered is to do with its validation. If a new programme is created then it will carry out the operation and fill the EventDetails table with the relevant data, unfortunately it was later discovered that if the create programme was re-ran due to a crew addition it ended in the huge portions of the data being duplicated. This is a major problem and the only way I could resolve this issue was for the create programme script to first remove all data currently stored in the EventDetails table. This resolved the issue however is not ideal as it means that any results already stored in the EventDetails table will be lost. Unfortunately after much time and effort I was unable to come up with an ideal or even better suited way to resolve this issue, although thankfully it does not effect the running of the system as the programme generation should only be ran when all the rowing club registrations are completed and up until the regatta day the Hants and Dorset are safe to re-run the process as many times as they like without any issues. Only after results have been entered would data potentially be lost from re-creating the programme.

10.3 Lessons Learnt

The main issue I encountered when completing this project was during the implementation stage and to do with separation of concerns. Throughout this project I have followed a strict structure which has allowed for easy steps to be followed, unfortunately the implementation stage really comes down to your quality of coding and no amount of structure, diagrams or planning can really help. Therefore as somewhat expected I found the implementation stage to be by far the most complicated and my initial attempts resulted in poor structure and quality of code. I put this issue down to my inexperience of programming and system implementation as this is the first major web application I have created. Therefore it was at

this stage after several weeks of work that I had to essentially start over as my coding had become such a mess that it had simply becoming impossible to work with. At this stage I returned to research and spent the next few weeks teaching myself stricter coding methods. It was during this time I learnt about separation of concerns and how important it is to separate code into easy, secure and manageable parts. This restart had resulted in a loss of several weeks work and had put me behind schedule, however thankfully the new method of coding allowed me to quickly get back to the stage I was originally at and very rapidly continue the development. This lesson really comes down to understanding what it takes to successfully code an application and how keeping a clearly defined structure with aspects of the programme being clearly separated allows for a far quicker and more efficient coding process. If I were to complete a project like this in the future I would be sure to conduct several weeks worth of research and analysis understanding the best way to code the specific application before actually beginning.

10.4 Future Improvements

The web application is currently specifically designed to setup and operate the South Coast Championship Regatta at Dorney. However at this stage it does not have any ability to complete other regattas or any South Coast Championships of the future. This extra feature would have required considerable more customisation of the application which was decided through analysis of the business options that the tight deadlines would simply not have provided enough time to complete. However I believe that this is the obvious place for improvement, with additional time the application could easily be upgraded through customisation options from an administrator perspective to deal with any type of regatta. This as a result would increase the quality and usefulness of the system no end and make it a fundamental part of any future regatta.

10.5 Overall Thoughts of the Project

Overall I am extremely happy with the outcome of the project. During the early stages I had many concerns regarding the size and complexity of the requirements being asked of me by the Hants and Dorset, especially considering I had not completed any programming for over a year. It was this level of inexperience that worried me the most as I knew to be able complete this project I was going to have to re-learn a programming language essentially from scratch. This process of preparation began almost as soon as the initial requirements were collected

from the Hants and Dorset during the feasibility stage. This felt very early to be thinking about coding as at this point the only solid fact known about the new system was that it would likely be a web based application. I began by setting myself small tasks of learning based on the technologies I believed would most like be used, during these learning phases I would create small mock-up web systems that carried out a simple tasks such as connecting to a database or use a particular style based on cascading style sheet. I consider this level of forward planning the major reason why this project became a success as it took me many weeks (more than expected) to bring myself back up to a level of competency in coding and even then as previously mentioned I had great difficulties in controlling and structuring my code when the true implementation began. Therefore I can honestly state that I do not believe the project would have been a success without this forward planning comprised of learning, as the weeks it took me to get to a reasonable level of expertise would have been eating into the main implementation time which would have left me with little to no time to develop the main features of the application.

10.6 Conclusion

In conclusion I am very happy with outcome of this project. Throughout this critical appraisal I have depicted areas that I felt were especially good and useful as well as detailing some areas that I found less useful, but as a whole I could not be more pleased with the end result. Please refer to appendix Z for customer feedback.

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12.Appendices

Appendices

Appendix A

12.1 Appendix A - The Hants and Dorset

The Hants & Dorset Amateur Rowing Association was founded in 1903 and originally consisted of seven Clubs – Bournemouth, Poole, Weymouth, Southsea, Southampton, Shanklin and Bournemouth YMCA.

Prior to this date rowing along the South Coast, from Herne Bay to Weymouth, was administered by the Coast Amateur Rowing Association but increased travel expenses made the area too large for Clubs to support all Regattas and there was a consequent drop in entries. A split was agreed with the Coast Amateur Rowing Association and the new Association grew slowly but surely until 1914, when all rowing ceased until it was revived in 1924.

Southsea are the oldest surviving Club – founded in 1860 and Bournemouth University were the last becoming affiliated to the Association in 2001 although this has since lapsed. Over the years other Clubs have come and gone – among them Southern Electricity Sports Association, Southern Railway, Southampton Docks and Marine –who became BTC, Sandown – who merged with Shanklin and Harland & Wolff, who became Vospers and are now Itchen Imperial.

The Association has championships for Men's Senior, Junior Senior, Junior and Novice Fours: for Ladies Senior, Junior and Novice Fours and for Veteran Fours that can be mixed. There are coxless pairs Championships for Men's Senior and Junior and Ladies Senior – and Single Sculling Championships for Men's and Ladies Senior, Junior and Novice. The Men's Senior Fours Championship has been staged since at least 1928 with Men's Junior Fours added in 1931. Men's Novice Fours was added in 1935 and Junior Senior Fours in 1969. The first ladies Fours Championship was not staged until 1978 – with Novices added in 1986 and Juniors added in 1992. The Veterans are the newest fours Championship added in 2003. Men's Senior and Junior Coxless Pairs were added in 1960 and Ladies Pairs in 1991. Men's Junior Single Sculls have been held since 1973 with the Senior event added in 1976 and Novices in 2003. Ladies Single Sculls started in 1997 with Juniors added in 2003 and Novices in 2004.

There are now thirteen affiliated Clubs affiliated to the Association – BTC, Christchurch, Itchen Imperial, Lymington, Newport, Poole, Ryde, Shanklin and Sandown, Westover & Bournemouth and Worthing and fourteen affiliated Regatta's – BTC, Christchurch, Itchen Imperial, Lymington, Newport, Poole, Ryde, Shanklin, Southampton Town, Coalporters, Southsea, Swanage, Westover & Bournemouth, and Woolston plus four Head Races – the Southampton Sculls HORR, the Southampton River and Small Boats HORR, the Southampton Coastal HORR and the Head of the Stour. There are also a growing number of Junior events now affiliated – including the Southampton Junior Regatta and Itchen Junior Sprint Regatta.

Taken from the Southampton Times and Hampshire Express

Published Saturday 25th July 1903

NEW ROWING ASSOCIATION

For the purpose of forming a Rowing Association for the counties of Hants and Dorset, including the Isle of Wight, a gratifying number of delegates of the Amateur Rowing Clubs and Regatta Committees met on Saturday (18th July 1903) at the West Quay Regatta Club, Southampton. In addition to the clubs represented, several letters approving of the scheme were received.

Major Devenish (Weymouth) was voted to the chair, and he remarked that this association was promoted in no way feeling of hostility to the Coast Amateur Rowing Association, or any other Amateur Rowing Association, but it was felt that rowing in the Hams and Dorset wanted encouragement, and that if these counties had an association of their own, with their own office bearers, more interest would be taken in the splendid art of rowing by wealthy and influential residents in the district, and that an impetus would be given to the sport which was distinctly necessary and desirable. In his opinion it would bring out a good many senior and junior men, who, as a rule, could not afford either the time or the money to go long distances to compete for points which alone would entitle them to hold the trophies offered by the older associations.

The following resolution was proposed by Mr. W. E. Burden (Poole), seconded by Mr. Jeflrey (Weymouth), and carried unanimously:-

“That a Rowing Association, to be called the Hants and Dorset Rowing Association, be formed to embrace the counties of Hants and Dorset, including the Isle of Wight”

Mr. W. II. Corbin (Bournemouth) moved:- “That the rules of the C.A.R.A. be adopted with such minor alterations as to make them applicable to this association, or are considered advisable, and that a sub committee, consisting of Messrs. Hartley, Williams, Burden, Corbin, be appointed to draw up the necessary alterations and report to the officers.” - This was seconded by Mr. Weake, and carried unanimously. - It was resolved to invite the Right Hon. the Earl of Malmesbury to accept the office of president, and a long list of gentlemen to be invited to act as vice-presidents was drawn up. Mr. W. E. Burden (Poole) was elected treasurer, and Mr. D. Hartley (Bournemouth) secretary. - The Emergency Committee was appointed to consist of a delegate from each rowing club and regatta committee in the district. - A cordial vote of thanks was passed to the West Quay Regatta Club for allowing the association the use of their club-house and for so hospitably entertaining the delegates. - The Chairman, in replying to a vote of thanks, hoped that the delegates in their own districts would endeavour to secure as much financial support for the association as possible, so that at an early date it would be possible to offer cups and trophies on behalf of the association.

Appendix B

12.2 Appendix B - The South Coast Championships

History of the South Coast Rowing Championships Regatta

The South Coast Rowing Championships was the inspiration of Archie Fraser, of Westover & Bournemouth Rowing Club who had the idea of an event involving the three South Coast Rowing Associations - the Hants & Dorset ARA, (HDARA) the Coast ARA (CARA) and the West of England ARA (WEARA) - who would provide a champion in each class to compete in "champion of champions" race at the end of the rowing season.

The first Championship Regatta was hosted by the Hants & Dorset ARA at Poole in 1957 where Christchurch were the winners of the first Senior event and BTC won both the Junior Senior and Junior Event. The following day officials from the three Associations met in Poole Yacht Club where it was decided that the Regatta should continue and hosted by each Association in rotation. It was agreed that the host Association would provide six matched boats and include any supporting events of their own choice.

In the early years there was a good deal of controversy between the Associations because of the differences in rules and because WEARA rowed in 36' river boats (now 42') but HDARA and CARA Clubs used 30' staggered seat Coastal boats. However annual meetings of the representative South Coast Committee (now the South Coast Council) have established a set of acceptable rules and regatta format. The original three-year cycle was changed to a four-year cycle with the regatta being held in WEARA every other year to counteract the disadvantage that WEARA crews suffered having to row in Coastal Boats.

Although the supporting events had often included ladies races there was no Championship event until 1976 - and in 1992 a Junior Ladies Championship event was added - with a Veterans Championship added in 2005 bringing the total of Championship events to six.

Appendix C

12.3 Appendix C - Dorney Lake

Dorney Lake was a twinkle in the eye of some Eton College teachers in the 1960's who felt a special 'still water' rowing course, offering greater safety than the River Thames, with its currents, traffic and varying widths, and all-year-round facilities for all weathers would be a very good idea. They were right. 40 years later their dream has come true.

Serious planning took several years in the 1980's and 1990's and construction began in 1996 with a 10-year development programme. We are on target for completion in 2006.

The stylish Boathouse was officially opened in June 2000 by Kate Hoey, then Minister for Sport & The Arts. Sir Steve Redgrave, five-times Olympic Gold Medallist for rowing and one of the UK's favourite sportsmen, launched our Junior Rowing Initiative in June 2002 in front of a huge and enthusiastic crowd of well-wishers.

The original aim of constructing a high-quality rowing course for Eton College pupils has not only been achieved but far exceeded. The site is acclaimed as one of the finest in the world and has the added attractions of a spectacular setting with a Park and Arboretum and a Nature Conservation area (see Leisure & Learning), a fully-equipped gymnasium for training and indoor rowing, its own in-house hospitality and events team for corporate and private functions (see Hospitality) - and access for all community sectors (see Dorney Lake Trust and Community Access below). A Site Interpretation Centre is planned (see Leisure & Learning) and other exciting projects are afoot.

Dorney Lake has been accorded several accolades by being selected to host the first of three multi-national regattas for the BearingPoint Rowing World Cup 2005, the World Rowing Championships 2006 and - a wonderful feather in the cap - rowing and sprint canoeing in the Olympic Games 2012.

The future therefore looks very bright. Dorney Lake is a local and national asset, both as a centre of sporting excellence and as an unusual, rounded venue for many other activities.

Appendix D

12.4 Appendix D - TELOS Analysis

Technical Feasibility:

To create the proposed business options one, two and three several forms of technology will be required. The assumption can be made that to cover the initial requirements set out by the Hants and Dorset that the system will have to be online (Internet) based.

The first piece of technology required is a database management system, luckily the options here are plentiful; the most popular database management systems on the market today are Oracle, Microsoft Access and MySQL. Each of these database management systems have the functionality, security and community base to deal with the proposed business options.

The second key piece of technology for these business options is a dynamic web language (middleware technology) that will be used to create the web application.

There are many dynamic web languages available each with their own specific advantages. The main languages available and readily used are ASP.NET, PHP, ColdFusion, Perl and Ruby. Each of these languages would be suitable to complete the proposed business option and all have very large developer communities to ensure information is widely available.

Finally as these options are Internet based the dynamic web language and database will have to be configured to run on a server that is Internet facing. This will require setting up and the creation of a domain name for access.

To conclude all proposed business options are feasible as all technology required is readily available.

Economic Feasibility:

The proposed business options will require a web server compatible with the desired middleware technology configured as well as an available database that can be created and manipulated. These services can be rented online and usually cost in the region of £50 per year for a reliable/quality service with the required middleware technology installed and pre-

configured. This cost also usually includes the creation of a domain name. There is the potential to save costs by attempting to utilise open source middleware such as PHP and MySQL. Using this technology would likely lower the costs of the initial setup. A second option is to run the system from a server owned by the Hants and Dorset. Although this method has many great advantages it is not a feasible option for the Hants and Dorset due to the technical expertise required to maintain the server and keep it secure and up to date. This does not mean however that any development on the purposed system can't be completed on a standalone server. Therefore all testing could be completed before paying to have the final production system online.

Although there is a cost connected to setting up and running the proposed options there is not any direct opportunity to get around these costs only to attempt to minimise them. In early meeting with the Hants and Dorset committee the developer expressed the fact that an Internet facing system would have a cost attached to it. The committee were an agreement that the £50 a year cost would be sustainable and would not be a major issue. Therefore the business options remain feasible.

Legal Feasibility:

Due to the type of system that is being created no huge legal conflicts or issues should exist. The South Coast Championship is an officially registered regatta of the Amateur Rowing Association and therefore falls under all rules and regulations of that committee. The only area that will require guidance is ensuring the web application is in accordance with Internet law. For example the disabilities act which dictates that all web sites should ensure that accessibility for all users is up held. However as long as these regulations are considered throughout the design stage of the application it should not be an issue to guarantee compliance.

Operational Feasibility:

The current practices and procedures in place are very simple in design. The entire process works by storing the information collected in text documents. This information is often copied and updated several times before it reaches its final state. This leads to a lot of

redundant information being stored as well as valuable time being wasted, when it could easily be more efficiently used elsewhere. The three proposed business options would not change the flow of data. The data is still passed around the system in the same way and the information is still readily accessible by the same people. It is for this reason why the proposed business options will not cause any real issues to the users when implemented. Some simple training may be required for the users to use the new system, however this should be easily completed as the information being stored stays the same only the process in which it is stored is being changed.

Schedule Feasibility:

The proposed systems final deadline as set out by the Hants and Dorset is June 8th 2007. However the deadline for this project set out by the University is March 23rd 2007. It is obviously the March deadline that the system and write-up will be completed by.

Business Option One: -

This option from a technical standpoint will be the simplest to create, the database and web application once designed can be created and tested in a few weeks of work and therefore will easily make the March 2007 deadline.

Business Option Two: -

The second business option is far more complicated. Due to the increased size and functionality of the system the analysis stage will require extensive research to be completed on what technologies best suit the Hants and Dorset as well as how to best implement it. This option will also involve many additional hours of programming so that the system can reach the required level of functionality set out by the Hants and Dorset. Once finished the testing period will have to be far more intensive to ensure all bugs have been worked out of the system. Each of the stages in the implementation will take time, however it is realistic to state that the March deadline should still be easily met, ensuring enough time is left for the project write-up.

Business Option Three: -

This business option main issue will lie with the sheer quantity of work required. Not only will all aspects of business option two have to be completed, but after that extended research will have to be carried out into the future plans of costal rowing in general attempting to predict potential regulation changes. This in addition to the many extra customisable options that will need to be considered and implemented into the system will take a considerable amount of time to complete. Although it may be possible to do so within the time frame, when considering other external factors and potential issues along the way it becomes not advisable to attempt this option. This option is simply to higher risk and has to many unknown variables for the tight deadline that has been outlined.

Appendix E

12.5 Appendix E - Methodologies Analysis

12.5.1 Aim of the Investigation

This analysis aims to analyse four forms of methodology which have been specifically chosen cover a wide and diverse area of the options available.

The chosen methodologies are: -

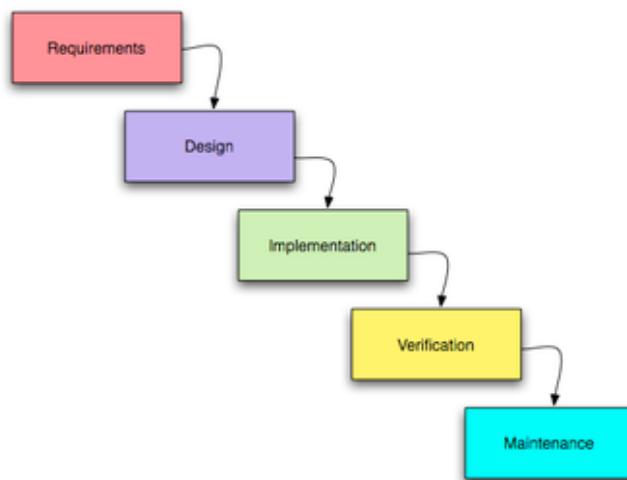
- **The Classic Waterfall Model** - Document Led Approach
- **SSADM** - Document Led Approach
- **DSDM** - Based on RAD, Iterative and Incremental Approach (Agile Method)
- **RUP** - Iterative and Incremental Approach

The analysis will outline the methodology and its key stages and then details advantages and disadvantages for each. By analysing each methodology based on this strict structure it should allow for a fair unbiased investigation which will help the developer choose a suitable method for this project.

12.5.2 The Classic Waterfall Model

The classic waterfall model is a sequential software development model in which development is seen as flowing steadily downwards (like a waterfall) through the phases of requirements analysis, design, implementation, testing, integration, and maintenance.

Please refer to the diagram at figure 12.5.2a.



12.5.2a The Classic Waterfall Model (Buzzle.com)

The origins of the waterfall model can be dated back to 1970 with work published by W. W. Royce; ironically, Royce himself utilized an iterative approach to software development. Royce (1970) stated that the model now known as the waterfall model "is risky and invites failure".

There are many break off and modified waterfall models currently in existence such as the Royce and Sashimi models. These modified models attempt to cover some of the known and well publicized issues with the classic waterfall model, by adding new stages or overlaps between stages.

Advantages of the Classic Waterfall Model

The main advantage to the Classic Waterfall model is that it details specifically with a strict structure the early stages of development such as requirements and design stages. It has been discussed many times that a bug discovered in the early stages of the production lifecycle is more economical in terms of money, effort and time to fix than the same bug found later on in the process. McConnell (1996, p. 72), states that "a requirements defect that is left undetected until construction or maintenance will cost 50 to 200 times as much to fix as it would have cost to fix at requirements time."

Another key advantage is that the waterfall model places direct emphasis on documentation. This has advantages for larger project that may span many months or possibly years. During this time it is possible for many different individuals to work on the project, which will require these individuals to be brought up to speed with the project details. If a fully working design document as specified by the waterfall model is present these new individuals or even entirely new teams should theoretically be able to bring themselves up to speed by reading these documents.

Disadvantage of the Classic Waterfall Model

A major known disadvantage of the waterfall model is the belief that it is impossible to get one stage of a software product's lifecycle 100% complete before moving on to the next stage as is specified in the waterfall model. For example it is difficult to get all the projects requirements upfront and these are often modified or updated as the project is completed.

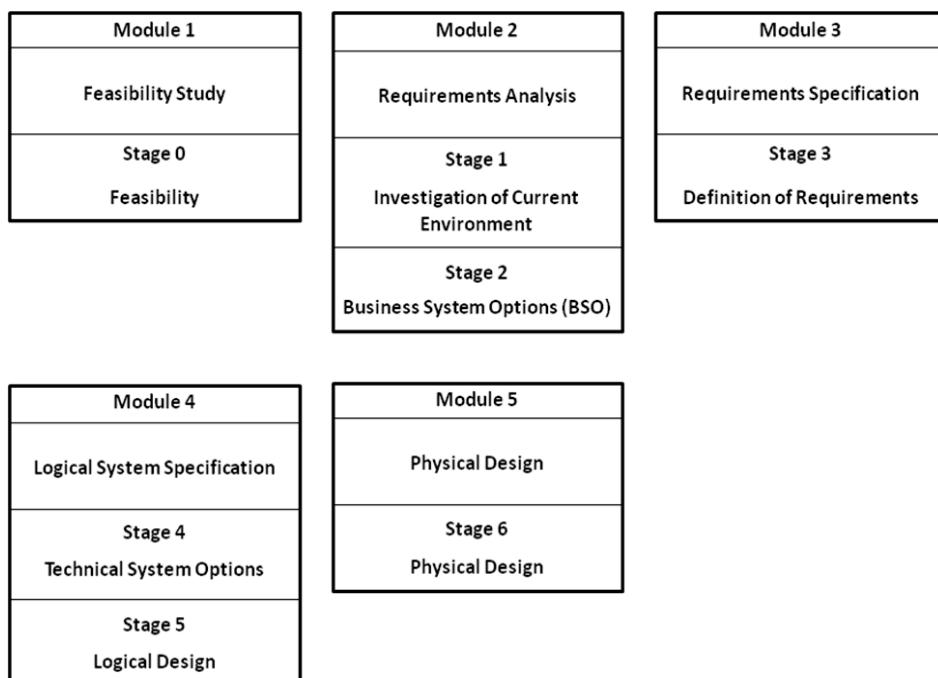
McConnell (2004) agrees with this sentiment stating that the design stage of a project is a major issue as it is impossible to know all requirements before designing is started.

12.5.3 Structured System Analysis and Design (SSADM)

Structured Systems Analysis and Design Method (SSADM) is a systems approach to the analysis and design of software information systems. SSADM was produced for the CCTA, a UK government office concerned with the use of technology in government, from 1980 onwards.

SSADM is based primarily on the classic waterfall method, it can be thought to represent a pinnacle of the rigorous document-led approach to system design, and contrasts with more contemporary Rapid Application Development methods such as DSDM.

SSADM is split into five key modules each with their individual stages. It works on collecting specific documentation and using modeling languages such as Data Flow Diagrams and Flow Charts throughout. Please refer to figure 12.5.3a for details of the SSADM stages.



12.5.3a Modules and Stages of SSADM

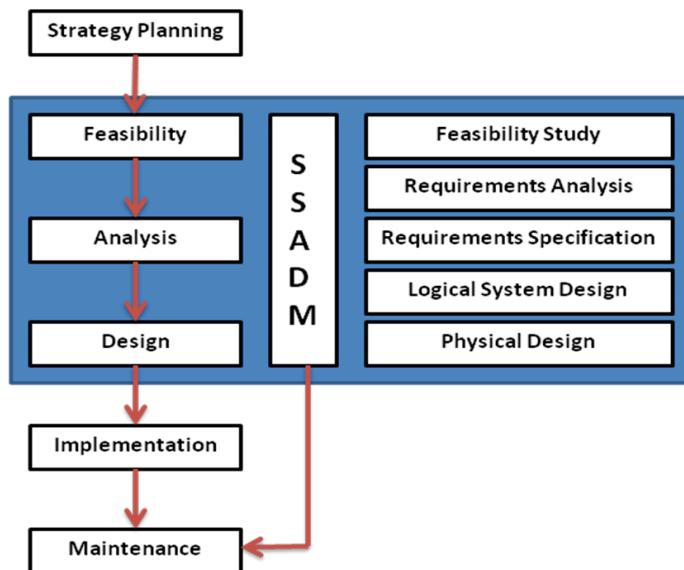
Advantages of SSADM

As SSADM as a general practice follows the waterfall model it encompasses many of the same advantages. For example SSADM is very document led which as previously detailed allows for a strict document led approach throughout the project life cycle which ensures that if project teams members were to change the documents should be in place to enable a simply and efficient handover.

Disadvantages to SSADM

As with the advantages SSADM carries the same disadvantages as the classic waterfall model, however it also has one main additional issue.

SSADM only details and covers the project life cycle through to the implementation stage, at this point it is left to the users prerogative using the earlier collected documents to complete the implementation stage. This is unpractical for software development as the most complex and challenging part to is the coding itself, therefore to leave this stage with no framework or structure to follow is unacceptable. Please refer to figure 12.5.3b for a diagram of the SSADM life cycle.



12.5.3b SSADM Life Cycle

12.5.4 Dynamic Systems Development Method (DSDM)

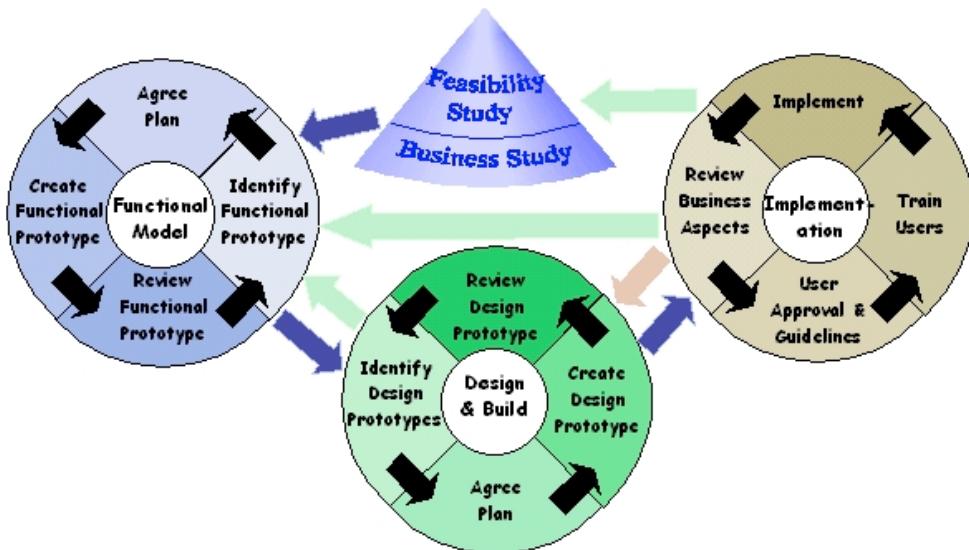
The Dynamic Systems Development Method (DSDM) is a framework originally based on the Rapid Application Development (RAD) method. DSDM utilizes continuing user involvement in an iterative development and incremental approach, which approach was designed to specifically combat the weaknesses of the classic waterfall model by responding to changing requirements, to develop software systems that satisfies the business requirements on time and on budget.

DSDM is one of a number of Agile methods for developing software and forms part of the Agile Alliance.

DSDM consists of three phases which attempt to address the common reasons for information systems projects failing, which include exceeding budgets, missing deadlines and lack of user involvement and top management commitment. The stages of DSDM are: -

- Pre-Project Phase
- Project Life-Cycle Phase
- Post Project Phase.

The diagram shown at figure 12.5.4a shows the DSDM framework and these phases in use.



12.5.4a DSDM Framework

Advantages of DSDM

The main advantage of DSDM is its development process through iterative and incremental approach. This is a key advantage as it directly combats the weaknesses of the classic waterfall model by supplying guidelines through the implementation process. It is this iterative development approach that has made DSDM popular with developers as coding in iterations is considered the most efficient and practical way. It is also known to give greater control over a rapid application (RAD) approach even though it is based upon these principles, this makes it an ideal choice for developers who want to use a RAD approach although are concerned by its lack of boundaries and control.

Disadvantage of DSDM

The main disadvantage to DSDM is its lack of emphasis of documentation. This is not so much of a problem for small projects, however large scale projects based across multiple teams or personal require strict documentation to ensure everyone involved knows what aspects of the project have been and still need to be completed.

Another issue being that as previously mentioned DSDM is based upon a RAD and even though supplies greater control to the development process it is still commonly accepted that a rapid application development process simply is not acceptable for some projects.

12.5.5 Rational Unified Process (RUP)

The Rational Unified Process (RUP) is an iterative software development process framework created by the Rational Software Corporation which since 2002 has been a part of IBM.

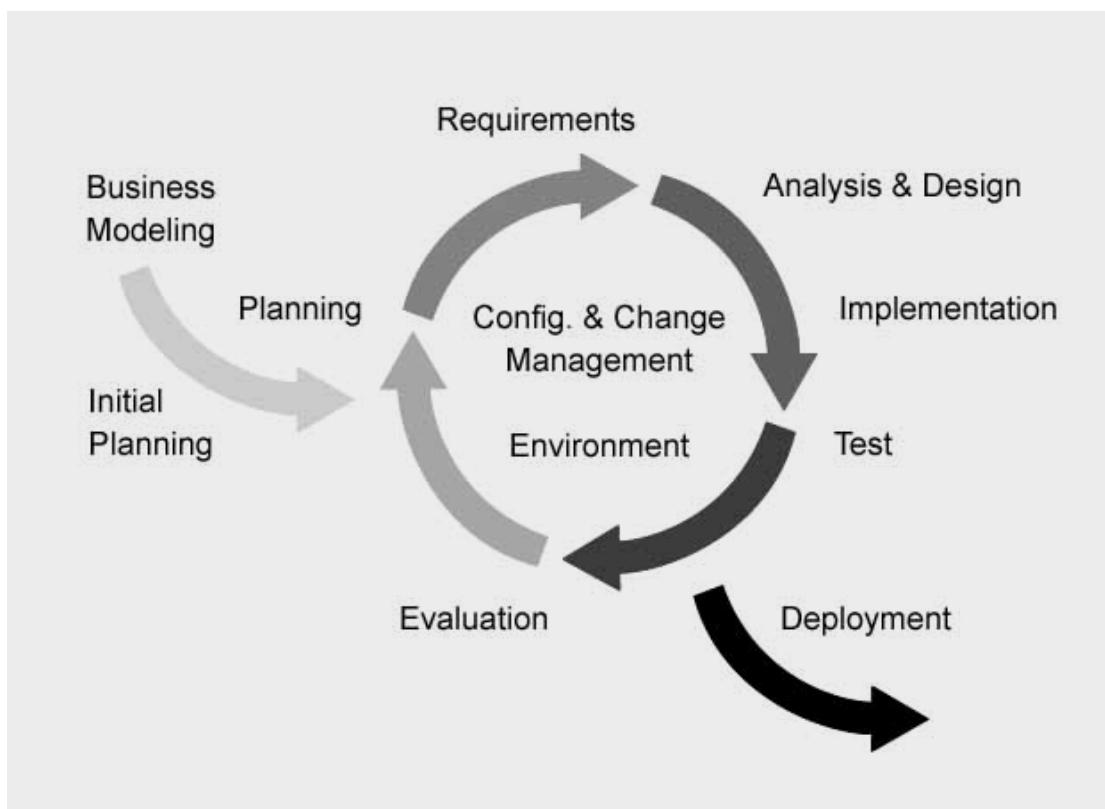
The framework was developed with the focus on diagnosing and characterising failed software projects, by doing so attempting to recognise the root causes of these failures and implementing the finding into the framework helping to ensure these failings could not be repeated.

The RUP is not designed as single concrete prescriptive process, but rather an adaptable process framework, intended to be tailored by the development organizations and software project teams that will select the elements of the process that are appropriate for their needs.

RUP is based on a set of six key principles for business-driven development:

- Adapt the process
- Balance stakeholder priorities
- Collaborate across teams
- Demonstrate value iteratively
- Elevate the level of abstraction
- Focus continuously on quality

The iterative approach of RUP that makes up the implementation stage of development is described in the diagram at figure 12.5.5a.



12.5.5a RUP Development through Iterations (IBM, 2006)

Advantages of RUP

As with DSDM, RUP utilises an iterative and incremental approach to development and therefore includes all the advantages that go with this process. RUP is also highly customisable and intuitive, it is designed to be customized for each project's specific needs therefore if modified correctly can cater for the individual project perfectly.

Disadvantage of RUP

If the users of RUP do not understand that RUP is a process framework, they may perceive it as a weighty and expensive process. RUP is not intended to be used straight out of the box.

The IBM Rational Method Composer product has been created to address this limitation and help process engineers and project managers customize the RUP for their project needs.

Break out open source products have been also been created to attempt to address this issue.

As the RUP must be customized for each project by a RUP process expert, the project's overall success is highly dependent on the abilities of this one person.

Appendix F

12.6 Appendix F - Project Gantt Chart

(Please see following page).

Appendix G

12.7 Appendix G - Regatta Registration Form

Club: _____

Regatta: _____ **Date:** _____

Club Colours:

COXED FOURS. Put status & Mens or Ladies EVENT & Crew Letter ie. A,B etc in CREW.

EVENT					Entry
CREW					Fee
Bow					
No 2					
No 3					
Str.					
Cox					

EVENT					Entry
CREW					Fee
Bow					
No 2					
No 3					
Str.					
Cox					

EVENT					Entry
CREW					Fee
Bow					
No 2					
No 3					
Str.					
Cox					

EVENT					Entry
CREW					Fee
Bow					
No 2					
No 3					
Str.					
Cox					

EVENT					Entry
CREW					Fee
Bow					
No 2					
No 3					

Str.					
Cox					

see over for Coxless Pairs/Doubles/Single Sculls.

EVENT					Entry
CREW					Fee
Bow					
No 2					
No 3					
Str.					
Cox					

COXLESS PAIRS/DOUBLES. Put status & Mens or Ladies EVENT & Crew Letter ie. A,B etc in Crew.

EVENT					Entry
CREW					Fee
Bow					
Str.					

EVENT					Entry
CREW					Fee
Bow					
Str.					

EVENT					Entry
CREW					Fee
Bow					
Str.					

SINGLE SCULLERS. Put status & Mens or Ladies EVENT & Crew Letter ie. A,B etc in Crew.

EVENT					Entry
CREW					Fee

EVENT					Entry
CREW					Fee

EVENT					Entry
CREW					Fee

I certify that the above mentioned Club is affiliated to the **Hants & Dorset ARA** or -

Enclosed is a Cheque/Postal order/Cash for £ _____

Address for Programme -

Telephone Number for Cancellation/Entry query -

Signed: _____ Print _____ Date _____

Appendix H

12.8 Appendix H - Documentation From Existing System

Notification of alteration to entry form

5

REGATTA:

SCRATCHING: Please scratch the following areas:

				CREW NAME:-
				"A", "B", "C" etc.

THE JOURNAL OF CLIMATE

THE JOURNAL OF CLIMATE

THE JOURNAL OF CLIMATE

CREW CHANGES tell us more about crew differences from civilian contexts than half a dozen. Only need to show modest differences from civilian contexts; form

CHARTS: USE AND PLAN, NO MOVE THAT CAN'T BE REVERSED OR CANCELLED.

4	3	Cox
2	2	
1	1	

THE JOURNAL OF CLIMATE

THE JOURNAL OF CLIMATE

THE JOURNAL OF CLIMATE

ANSWER

卷之三

LAIE ENRIES: Charged at per seat. USE NAMES CHANGED CREEW.
EVENT TYPE: MEN or STATUS: per seat. I for Sculier.

NUMBER	44-2-1	LADIES		Cox
NUMBER	1x	LADIES		
NAME				4
NAME				3
NAME				2
NAME				2
NAME				1
NAME				1

THE JOURNAL OF CLIMATE

THE JOURNAL OF CLIMATE

THE JOURNAL OF CLIMATE

ANSWER

Fee payable: _____ Club Captain/Responsible Officer: _____

Water Safety Code - Safety Audit Sheet

Adapted for use by the Hants & Dorset Amateur Rowing Association Water Safety Sub-committee.

QUESTIONS	Yes	No
1.0 Has a person been appointed to act as Water Safety Adviser for the event as required by the ARA?	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
1.1 Is the Water Safety Adviser a member of the Organising Committee?	<input type="checkbox"/>	<input type="checkbox"/>
1.2 Is Water Safety a regular item at each meeting of the Organising Committee?	<input type="checkbox"/>	<input type="checkbox"/>
1.3 Is Water Safety part of the event review?	<input type="checkbox"/>	<input type="checkbox"/>
2.0 Has a Risk Assessment been undertaken covering situations on both land and water?	<input type="checkbox"/>	<input type="checkbox"/>
2.1 Is the nature of the course taken into account including the start and finish area, the room for crews to overtake over the majority of the course and room to accommodate other water users or crews not racing?	<input type="checkbox"/>	<input type="checkbox"/>
2.2 Is the Risk Assessment reviewed after each event taking account of previous incidents, changes to the course or new hazards?	<input type="checkbox"/>	<input type="checkbox"/>
3.0 Has a Safety Plan been formulated, based on your Risk Assessment?	<input type="checkbox"/>	<input type="checkbox"/>
3.1 Does the Safety Plan cover the decision making process for cancellation due to inclement conditions, rules applying to the event, communications, medical and first aid, the start and finish, Race Monitors/Umpires, instructions to officials and competitors, emergency vehicle access and an Accident and Emergency Action Plan?	<input type="checkbox"/>	<input type="checkbox"/>
3.2 Has the Safety Plan been shown to the police, water authority, ambulance service, life saving and first aid organisations to confirm that the event can take place under safe conditions for both competitors and the general public?	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Do you ensure that officials, safety boat crews, umpires, first aiders and medical officer are fully briefed about your Accident and Emergency Action Plan?	<input type="checkbox"/>	<input type="checkbox"/>
4.0 First Aid:		
4.1 Do you provide first aid cover?	<input type="checkbox"/>	<input type="checkbox"/>
4.2 Do you appoint a Medical Adviser to ensure that all medical aspects, recovery and first aid are put in place?	<input type="checkbox"/>	<input type="checkbox"/>
4.3 Do you ensure that competitors, supporters and the general public know where to obtain first aid?	<input type="checkbox"/>	<input type="checkbox"/>
4.4 Do you have a medically qualified doctor on site to provide general medical support and advice?	<input type="checkbox"/>	<input type="checkbox"/>
4.5 Do you have a method of communication to summon first aid to an accident?	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
5.0 Safety boats		
5.1 Do you provide safety boats suitable for the task in sufficient numbers to provide rapid response?	<input type="checkbox"/>	<input type="checkbox"/>
5.2 Are the crews of your safety boats competent in boat handling and rescue techniques (preferably trained to RYA Powerboat Level 2)?	<input type="checkbox"/>	<input type="checkbox"/>
5.3 Do your safety boats carry buoyancy aids, line throwing equipment, thermal blankets, first aid equipment, bailer, knife, paddle, engine cut-out lanyard device, anchor and line and simple hand holds fixed to the side?	<input type="checkbox"/>	<input type="checkbox"/>
5.4 Are the crews in radio contact with Event Control?	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
5.5 Do you provide lifejackets/buoyancy aids for all safety boat crews on duty?	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>

6.0	Umpires launches		
7.1	Do your Umpires' launches carry buoyancy aids, line throwing equipment, thermal blankets and first aid equipment?	<input type="checkbox"/>	<input type="checkbox"/>
7.2	Do you provide lifejackets/buoyancy aids for all Launch Umpires when on duty?	<input type="checkbox"/>	<input type="checkbox"/>
7.3	Do you instruct your Umpires that in the event of an accident their first duty is to the safety of the competitor?	<input type="checkbox"/>	<input type="checkbox"/>
7.4	Do you provide Launch Umpires with radio communication and loudhailers?	<input type="checkbox"/>	<input type="checkbox"/>
7.0	Bank Umpiring:		
7.1	Where practical do you provide your Bank Umpires with line throwing equipment?	<input type="checkbox"/>	<input type="checkbox"/>
7.2	Do you provide radio communication and loudhailers for Bank Umpires?	<input type="checkbox"/>	<input type="checkbox"/>
8.0	Race Monitors in Processional Races		
8.1	Do you appoint sufficient Race Monitors so that between them they can observe the full course?	<input type="checkbox"/>	<input type="checkbox"/>
8.2	Do you place Race Monitors in positions where there are tight bends, narrow passages that prevent overtaking, or where special care needs to be taken?	<input type="checkbox"/>	<input type="checkbox"/>
8.3	Do you provide Race Monitors with radio communication and loud hailers?	<input type="checkbox"/>	<input type="checkbox"/>
9.0	Instructions to Officials and Competitors		
9.1	Do you provide officials and competitors with instructions which include local racing rules, navigation rules, flow pattern and identification of local hazards together with a plan of the course illustrating these features?	<input type="checkbox"/>	<input type="checkbox"/>
9.2	Do you advise competitors of the actions they should take in the event of an accident together with emergency telephone numbers and the location of the nearest telephone?	<input type="checkbox"/>	<input type="checkbox"/>
9.3	Do you provide officials with specific instructions regarding their particular duty?	<input type="checkbox"/>	<input type="checkbox"/>
9.4	Do you instruct course officials and safety launch crews to be in position prior to crews boating?	<input type="checkbox"/>	<input type="checkbox"/>
10.0	Do you have a system to check that competitors' boats are in a safe condition to race before embarkation is allowed i.e. bow balls secure, heel release mechanisms secure and working, rudder lines and fine in good working order?	<input type="checkbox"/>	<input type="checkbox"/>
11.0	Where required do you display warning notices of the event to other water users and the actions they should take?	<input type="checkbox"/>	<input type="checkbox"/>
11.1	Where practical do you clearly buoy the racing course and traffic lanes for other passing river users as required by the local navigation or harbour authority?	<input type="checkbox"/>	<input type="checkbox"/>

Statement by the event:

This safety audit has been undertaken thoroughly and the response to the questions truly reflect the events compliance with the ARA's Water Safety Code.

Print

Name

Signed
On the satisfactory completion of an audit the Certificate of Compliance below will be signed.

Position

held

This is to certify that the Safety Procedures
of

were audited and found to comply with the requirements of the ARA
on Water
Safety Code and Guidance Notes.

Signed

H&D/Wessex Safety Sub
Committee.

Print Name

Date

Boat Safety Form

	<p>Hants & Dorset Amateur Rowing Association. Water Safety Sub Committee.</p> <p>51st SOUTH COAST ROWING CHAMPIONSHIPS.</p> <p>2nd SOUTH COAST JUNIOR REGATTA.</p> <p>Dorney Lake, Eton. Saturday, 8th September, 2007.</p>				
BOAT INSPECTION CHECK LIST.					
<p>This check list will be used to Inspect Club boats at Hants & Dorset ARA Regatta's to ensure that they comply with the ARA Water Safety Code of Practice and any additional guide lines added by the Hants & Dorset Water Safety Sub Committee. The check list can also be used by Clubs to check their boats before a Regatta.</p> <p>The check list is based on the analysis of faults found during Boat inspection during the 2001 to 2004 season.</p>					
DATE OF INSPECTION.	Saturday, 8th September, 2007.				
CLUB					
BOAT TYPE					
BOAT NAME					
SAFETY ADVISOR					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">No fault</td> <td style="width: 15%;">Fault Found</td> <td>Fault - cross through those not applicable.</td> <td style="width: 15%;">Other</td> </tr> </table>		No fault	Fault Found	Fault - cross through those not applicable.	Other
No fault	Fault Found	Fault - cross through those not applicable.	Other		
BUOYANCY TANKS.					
Bow		Split/Tear/Lifting Tape/Damage to Beading/Missing Bung/Other			
Stern		Split/Tear/Lifting Tape/Damage to Beading/Missing Bung/Other			
STRETCHERS.					
Bow		Bolts - missing/length/other			
2		Bolts - missing/length/other			
3		Bolts - missing/length/other			
Stroke		Bolts - missing/length/other			
HEEL RESTRAINTS.					
Concept2 Style foot plates? YES/NO		If Concept2 Style Foot plates fitted are they modified in accordance with ARA & H&DSSC recommendations?			
Bow		Broken/Missing/long/un-tied/looped/other. C2Foot plates modified YES/NO			
2		Broken/Missing/long/un-tied/looped/other. C2Foot plates modified YES/NO			
3		Broken/Missing/long/un-tied/looped/other. C2Foot plates modified YES/NO			
Stroke		Broken/Missing/long/un-tied/looped/other. C2Foot plates modified YES/NO			
RIGGERS					
Bow		Bolt(s) to long/sharp edge/other			
2		Bolt(s) to long/sharp edge/other			
3		Bolt(s) to long/sharp edge/other			
Stroke		Bolt(s) to long/sharp edge/other			
SHELL					
Condition		splits/holes/rough edges/sharp edges/protuding screws/other			
STEERING					
Condition		line frayed/line broken/fittings damaged/pin protuding/other			
Attached.		Rudder lines attached in such away that cox can not get entangled.	YES/NO		
		ie. Fixed in front of cox. - pulley/bungee/other.			
SELF BAILERS					
Condition		leaking/not operating/other			
BOW BALL					
Single Sculls only. If agreed by H&DWSSC as not required should have label to this effect.					
Fitted	YES	NO	If not fitted - can one be fitted? Agreed by H&D not required?		
Condition			YES/NO/AGREED N/R		
NUMBER BRACKET/NUMBERS					
Condition		Not Fitted/not secure/damaged			
GENERAL COMMENTS					
INSPECTED BY					

BOATINSPEC04

Appendix I

12.9 Appendix I - Blank Requirements Document

Requirement Id:	Priority:
Requirement:	
Constraints/Parameters:	
Description:	
Suggested Solutions:	
Related Requirements:	
Current Resolution:	

Appendix J

12.10 Appendix J - Requirements Document

KEY:

F = Functional Requirements

NF = Non-functional Requirements

Priority Rating

- 1 - Essential
- 2 - High Priority
- 3 - Intermediate
- 4 - Low Priority

Functional Requirements

Requirement Id: F1	Priority: 1
Requirement:	Data Collection.
Constraints/Parameters:	None.
Description:	Allow all regatta data to be stored, viewed and updated from a central location.
Suggested Solutions:	The use of a database to store all regatta data and a web application front end to allow the data to be created, viewed and updated.
Related Requirements:	None.
Current Resolution:	All data is currently stored as a paper-based system. Files containing all information are stored at the Hants and Dorset secretaries home. There are currently no backups of this information.

Requirement Id: F2	Priority: 2
Requirement:	
Segregation of Users.	
Constraints/Parameters:	
None.	
Description:	
Allow three types of user to have access to the system. Full Administrator, Club Administrator and Standard User. Each of these users must only have access to create, view or update information that corresponds with their access level. Information that does not apply to them should not be visible at any point on the web application.	
Suggested Solutions:	
The web application will have the ability to filter information and rights depending on the user's access level.	
Related Requirements:	
F1	
Current Resolution:	
N/A	

Requirement Id: F3	Priority: 2
Requirement:	
Rowing Club Registration.	
Constraints/Parameters:	
The rowing club registration should be completed by the specific rowing club secretaries and require no assistance from Hants and Dorset.	
Description:	
A method in which rowing club registration information can be collected directly from rowing club secretaries and be readily accessible and easily updated by the south coast championship committee.	
Suggested Solutions:	
A web application that will allow the rowing club secretaries to login into the system and input the information directly. This information will be submitted to a database which the Hants and Dorset secretary can then use as the clubs registration.	
Related Requirements:	
F1	
Current Resolution:	
The Hants and Dorset secretary currently has to manually send out paper forms to all rowing clubs. These forms are filled out by the rowing clubs secretaries and returned to the Hants and Dorset secretary for the information to be written up into a rowing club registration document.	

Requirement Id: F4	Priority: 2
Requirement:	
Automated Programme.	
Constraints/Parameters:	
Each rowing club will have many crews and each crew will be assigned to an event.	
Description:	
An automated process that splits all rowing clubs crews into their specific events.	
Suggested Solutions:	
The web application will use the completed rowing club registration data to compile a programme based on the number of crews registered from the individual rowing clubs.	
Related Requirements:	
F1, F3	
Current Resolution:	
The programme is currently compiled manually by the Hants and Dorset committee using the completed rowing club registration document.	

Requirement Id: F5	Priority: 3
Requirement:	
Crew Name Change.	
Constraints/Parameters:	
Only crew names that were originally signed as a substitute can be updated to row in the first crew.	
Description:	
Every crew in the regatta has four substitute crew members named as part of the rowing club registration. It is possible for the crew to change a maximum of two crew members before their event begins. This covers crews for unforeseen circumstances such as illness etc.	
Suggested Solutions:	
The web application will allow Hants and Dorset committee members to update crew information in real time on the regatta day. This change will then be reflected on any reports printed.	
Related Requirements:	
F1, F3	
Current Resolution:	
Currently rowing clubs must submit a crew change form to the Hants and Dorset committee for the information to be updated. This update is then completed by the committee.	

Requirement Id: F6	Priority: 2
Requirement:	
Storing Regatta Results.	
Constraints/Parameters:	
The regatta race committee will have to enter this information directly after each event has been completed as they are the only people with the required information.	
Description:	
Race results can be written directly into the system on the regatta day.	
Suggested Solutions:	
The web application will allow information to be entered in real time as the results are known.	
Related Requirements:	
F1, F3, F4	
Current Resolution:	
The regatta race committee fill out pre-created forms with the results and times for each race.	

Requirement Id: F7	Priority: 2
Requirement:	
Storing Regatta Times.	
Constraints/Parameters:	
The regatta race committee will have to enter this information directly after each event has been completed as they are the only people with the required information.	
Description:	
Race times can be written directly into the system on the regatta day.	
Suggested Solutions:	
The web application will allow information to be entered in real time as times are known.	
Related Requirements:	
F1, F3, F4	
Current Resolution:	
The regatta race committee fill out pre-created forms with the results and times for each race.	

Requirement Id: F8	Priority: 3
Requirement:	
Rowing Club Registration Report.	
Constraints/Parameters:	
This report will be accessible to all users of the system.	
Description:	
A report needs to be generated that shows all registered crews for each rowing club. This information is used by the regatta committee and competing rowing clubs to see which crews have been entered for the regatta.	
Suggested Solutions:	
The web application will be able to compile this information in real time. Allowing for the report to be easily updated if last minute crew changes take place.	
Related Requirements:	
F1, F3	
Current Resolution:	
There is currently no resolution available to easily display a rowing clubs registration information.	

Requirement Id: F9	Priority: 2
Requirement:	
Regatta Programme Report.	
Constraints/Parameters:	
This report will be accessible to all users of the system.	
Description:	
A report needs to be generated that shows the entire regatta programme. This is to ensure that up to date information can be viewed by any competitor at any time.	
Suggested Solutions:	
The web application will be able to compile this information in real time.	
Related Requirements:	
F1, F4	
Current Resolution:	
Currently this information is printed before the regatta and handed sent out to each rowing club secretary.	

Requirement Id: F10	Priority: 2
Requirement:	
Event Results and Times Report.	
Constraints/Parameters:	
This report will be accessible to all users of the system.	
Description:	
A report needs to be generated that shows all events results and their times. The information is used as the official results document and can be sent to or generated by every rowing club. The report will also be used during the prize giving.	
Suggested Solutions:	
The web application will be able to compile this information in real time. Allowing the event results and times to be generated instantly.	
Related Requirements:	
F1, F4, F6, F7	
Current Resolution:	
Currently this information is compiled after the regatta. The process currently takes several hours to gather and re-write all the required information.	

Requirement Id: F11	Priority: 3
Requirement:	
Rowing Clubs Wins and Points Report.	
Constraints/Parameters:	
This report will be accessible to all users of the system.	
Description:	
A report needs to be generated that shows each rowing clubs wins and the points that they have achieved throughout the regatta. This information is used to compile the overall results of the regatta.	
Suggested Solutions:	
The web application will be able to compile this information in real time. Allowing the rowing clubs current wins and points to be generated instantly.	
Related Requirements:	
F1, F6	
Current Resolution:	
Currently this information is compiled after the regatta. The process currently takes several hours to gather and re-write all the required information.	

Requirement Id: F12	Priority: 3
Requirement:	
Associations Wins and Points Report.	
Constraints/Parameters:	
This report will be accessible to all users of the system.	
Description:	
A report needs to be generated that shows each associations wins and the points they have achieved throughout the regatta. This information is used to compile the overall results of the regatta.	
Suggested Solutions:	
The web application will be able to compile this information in real time. Allowing the associations current wins and points to be generated instantly.	
Related Requirements:	
F1, F6	
Current Resolution:	
Currently this information is compiled after the regatta. The process currently takes several hours to gather and re-write al the required information.	

Non-functional Requirements

Requirement Id: NF1	Priority: 1
Requirement:	
Simplify Work Flow.	
Constraints/Parameters:	
None.	
Description:	
The current work flow is very in-efficient. It entails lengthy lead times between the Hants and Dorset committee and rowing clubs in waiting for information to be sent out, collected and finally submitted. These lead times often cause information being submitted late, which as a result cause delays in the preparation of the regatta.	
Suggested Solutions:	
Streamline the process reducing the number of steps between sending and receiving information between the Hants and Dorset committee and rowing clubs. This can be completed by providing a central location where both the Hants and Dorset committee and rowing clubs can view, create, or update information quickly and see the results of this information instantly.	
Related Requirements:	
F1	
Current Resolution:	
Currently all information sent between the Hants and Dorset committee and rowing clubs is completed via the postal service.	

Requirement Id: NF2	Priority: 2
Requirement:	
Update Obsolete Techniques and Technologies.	
Constraints/Parameters:	
None.	
Description:	
The current system being used is based purely around the passing of information via paper forms. The Hants and Dorset would like to modernise the system using technologies that will improve the efficiency of the processes completed pre-regatta and on the regatta day.	
Suggested Solutions:	
The use of web technologies and databases will allow all currently collected paper based information to be stored electronically and let users access or update this information from anywhere in the world instantly.	
Related Requirements:	
None.	
Current Resolution:	
N/A	

Requirement Id: NF3	Priority: 1
Requirement:	
Ease of Use.	
Constraints/Parameters:	
None.	
Description:	
Ensure ease of use for Hants and Dorset committee and rowing clubs.	
Suggested Solutions:	
The web application will have take into consideration the user types and their technical know how. Information and navigation will have to be clear and self explanatory ensure users can find what they need quickly and easily. The use of search tools will also be implemented to help quick efficient navigation.	
Related Requirements:	
None.	
Current Resolution:	
N/A	

Requirement Id: NF4	Priority: 3
Requirement:	
Provide a level of “Future Proofing”.	
Constraints/Parameters:	
See budget.	
Description:	
Ensure that the technologies used to create the system have the ability to be constantly updated to the latest security levels and functionality. Also ensure the system is designed and built in such a way that upgrades specific to the Hants and Dorset can be applied easily.	
Suggested Solutions:	
Ensure the chosen technologies are well known and used as well as having large developer communities.	
Related Requirements:	
None.	
Current Resolution:	
There is currently no system in place that can be upgraded.	

Requirement Id: NF5	Priority: 2
Requirement:	
Improved Communication.	
Constraints/Parameters:	
None.	
Description:	
To improve communication between user groups. (Hants and Dorset committee members, rowing club secretaries and other users such as competitors and rowing enthusiasts).	
Suggested Solutions:	
The system will act as a central point where all regatta information can be viewed. It will be the first point of reference for anyone needing information therefore and supply clear contact fields which can be submitted directly to the Hants and Dorset committee.	
Related Requirements:	
None.	
Current Resolution:	
Current communication channels are slow and unreliable due to all communications being completed via the postal service.	

Requirement Id: NF6	Priority: 1
Requirement:	
Budget.	
Constraints/Parameters:	
None.	
Description:	
The Hants and Dorset have a very limited budget available for the design, implementation and maintenance of the system. Therefore it is important that the technologies chosen for the system take this into consideration.	
Suggested Solutions:	
The use of open source (free) technologies in the design and implementation of the system.	
Related Requirements:	
None.	
Current Resolution:	
The current system in place requires only a small budget for printing and sending of forms to rowing clubs.	

Requirement Id: NF7	Priority: 2
Requirement:	
Aesthetics.	
Constraints/Parameters:	
Only logos, photos and picture approved by the Hants and Dorset can be used on the web application.	
Description:	
Aesthetics of the web application must suit the Hants and Dorset brand, using only official logos and pictures. It must also look and feel professional as it will be the central point for all information regarding the South Coast Championship regatta.	
Suggested Solutions:	
The web application can be customised to the Hants and Dorset's exact needs and wants.	
Related Requirements:	
None.	
Current Resolution:	
There is currently no system of this type in place.	

Requirement Id: NF8	Priority: 1
Requirement:	
Security.	
Constraints/Parameters:	
None.	
Description:	<p>Due to all regatta information being stored in the central database behind the internet facing web application it is important that security measures are in place to ensure this information can not be accessed by unauthorised personnel. It is also important that no personal information about specific users is stored in the database as this would be in breach of the Hants and Dorset's privacy rules and regulations.</p>
Suggested Solutions:	<p>Web technologies have many forms of security that can be implemented at both the software and hardware level.</p>
Related Requirements:	
None.	
Current Resolution:	<p>There is currently no system of this type in place.</p>

Appendix K

12.11 Appendix K - MoSCoW Rules

The following table uses of a form of MoSCoW Rules to identify relationships and prioritisation.

Requirement Id	Requirement	Related Requirements	Priority
F1	Data Collection	None	1
F2	Segregation of Users	F1	2
F3	Rowing Club Registration	F1	2
F4	Automated Programme	F1, F3	2
F5	Crew Name Change	F1, F3	3
F6	Storing Regatta Results	F1, F3, F4	2
F7	Storing Regatta Times	F1, F3, F4	2
F8	Rowing Club Registration Report	F1, F3	3
F9	Regatta Programme Report	F1, F4	2
F10	Event Results and Times Report	F1, F4, F6, F7	2
F11	Rowing Clubs Wins and Points Report	F1, F6	3
F12	Associations Wins and Points Report	F1, F6	3

NF1	Simplify Work Flow	None	1
NF2	Update Obsolete Techniques and Technologies	None	2
NF3	Ease of Use	None	1
NF4	Provide a level of “Future Proofing”	None	3
NF5	Improved Communication	None	2
NF6	Budget	None	1
NF7	Aesthetics	None	2
NF8	Security	None	1

Appendix L

12.12 Appendix L - Entity Grid

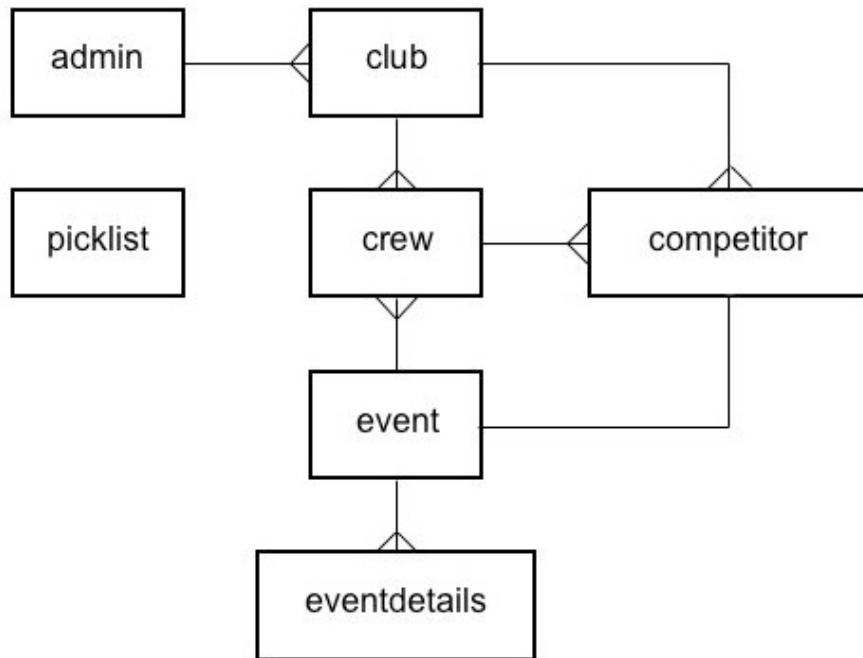
The table below maps the relationships between the functional requirements.

	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
F1												
F2	x											
F3	x											
F4	x		x									
F5	x		x									
F6	x		x	x								
F7	x		x	x								
F8	x		x									
F9	x			x								
F10	x			x		x	x					
F11	x					x						
F12	x					x						

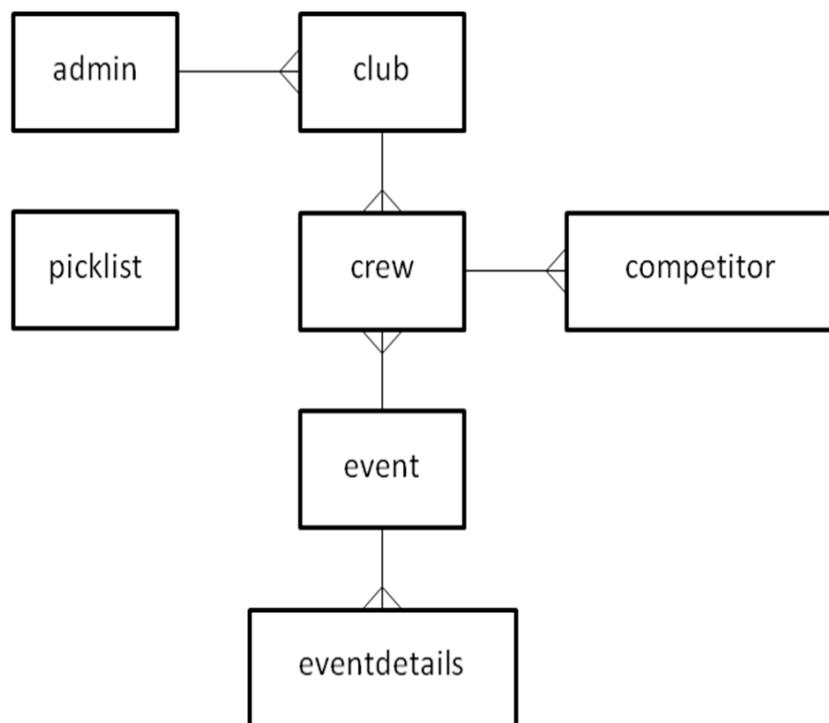
Appendix M

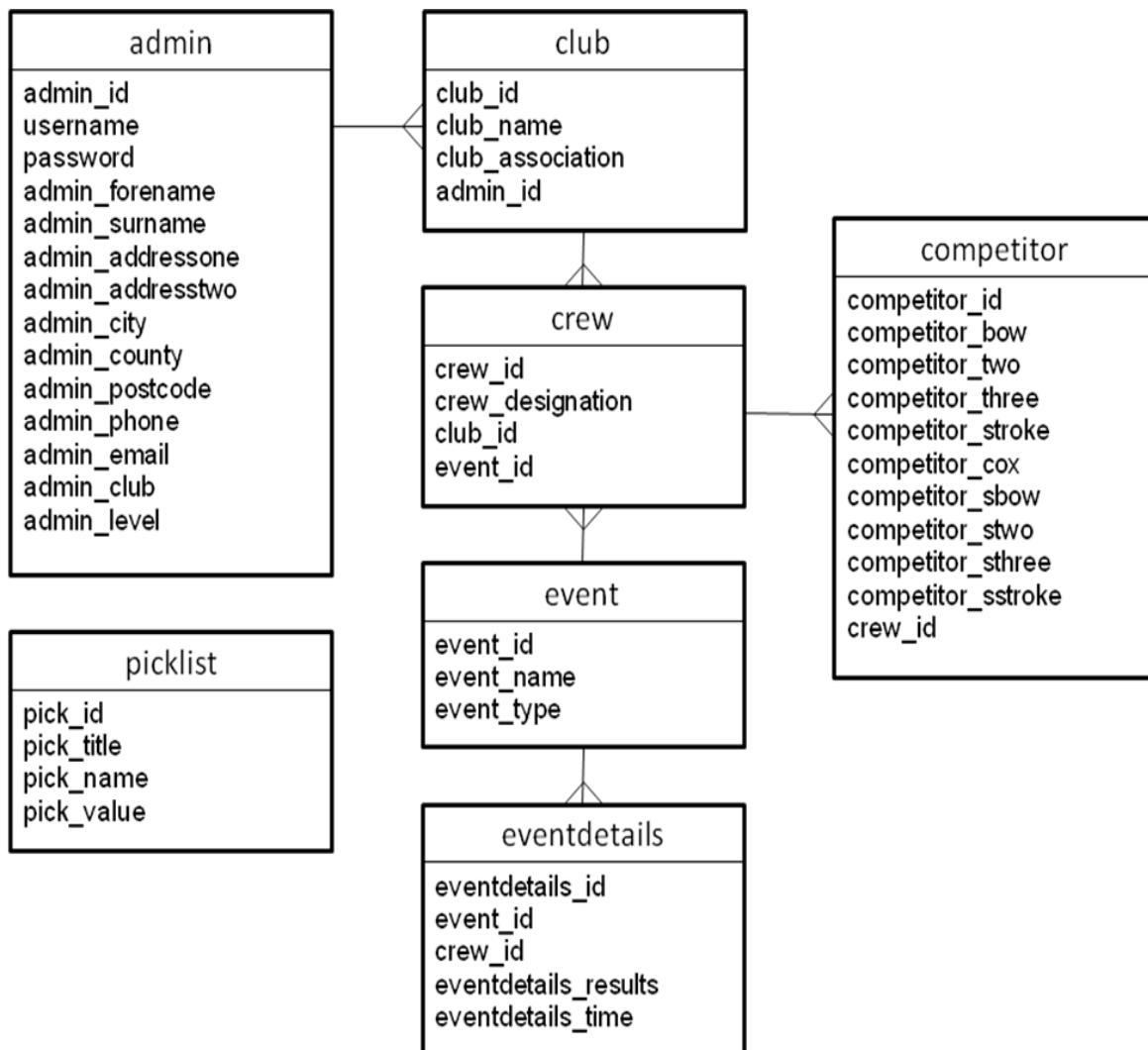
12.13 Appendix M - Entity Relationship Diagrams

ERD Version One



ERD Version Two



ERD Version Three

Appendix N

12.14 Appendix N - Data Dictionary

Admin Table

```
'admin_id` int(8) NOT NULL auto_increment,
`username` varchar(32) character set hp8 NOT NULL default '',
`password` varchar(32) character set hp8 NOT NULL default '',
`admin_forename` varchar(32) character set hp8 NOT NULL default '',
`admin_surname` varchar(32) character set hp8 NOT NULL default '',
`admin_addressone` varchar(255) character set hp8 NOT NULL default '',
`admin_addresstwo` varchar(255) character set hp8 NOT NULL default '',
`admin_city` varchar(255) character set hp8 NOT NULL default '',
`admin_county` varchar(255) character set hp8 NOT NULL default '',
`admin_postcode` varchar(32) character set hp8 NOT NULL default '',
`admin_phone` varchar(32) character set hp8 NOT NULL default '',
`admin_email` varchar(255) character set hp8 NOT NULL default '',
`admin_club` varchar(32) character set hp8 NOT NULL default '',
`admin_level` varchar(4) character set hp8 NOT NULL default '',
PRIMARY KEY (`admin_id`)
```

Club Table

```
'club_id` int(8) unsigned NOT NULL auto_increment,
`club_name` varchar(32) character set hp8 NOT NULL default '',
`club_association` varchar(32) character set hp8 NOT NULL default '',
PRIMARY KEY (`club_id`)
```

Crew Table

```
'crew_id` int(8) unsigned NOT NULL auto_increment,
`crew_designation` char(1) character set hp8 NOT NULL default '',
`club_id` int(8) NOT NULL default '0',
`event_id` int(8) NOT NULL default '0',
PRIMARY KEY (`crew_id`)
```

Competitor Table

```
'competitor_id` int(8) unsigned NOT NULL auto_increment,
`competitor_bow` varchar(32) character set hp8 NOT NULL default '',
`competitor_two` varchar(32) character set hp8 NOT NULL default '',
`competitor_three` varchar(32) character set hp8 NOT NULL default '',
`competitor_stroke` varchar(32) character set hp8 NOT NULL default '',
`competitor_cox` varchar(32) character set hp8 NOT NULL default '',
`competitor_sbow` varchar(32) character set hp8 NOT NULL default '',
`competitor_stwo` varchar(32) character set hp8 NOT NULL default '',
`competitor_sthree` varchar(32) character set hp8 NOT NULL default '',
`competitor_sstroke` varchar(32) character set hp8 NOT NULL default '',
`crew_id` int(8) NOT NULL default '0',
PRIMARY KEY (`competitor_id`)
```

Event Table

```
'event_id` int(8) NOT NULL auto_increment,
`event_name` varchar(32) character set hp8 NOT NULL default '',
`event_type` varchar(32) character set hp8 NOT NULL default '',
PRIMARY KEY (`event_id`)
```

EventDetails Table

```
'eventdetails_id` int(8) NOT NULL auto_increment,
`event_id` int(8) NOT NULL default '0',
`crew_id` int(8) NOT NULL default '0',
`eventdetails_result` varchar(4) character set hp8 default NULL,
`eventdetails_time` varchar(32) character set hp8 default NULL,
PRIMARY KEY (`eventdetails_id`)
```

Picklist Table

```
'pick_id` int(10) unsigned NOT NULL auto_increment,  
'pick_title` varchar(100) character set hp8 NOT NULL default "",  
'pick_name` varchar(100) character set hp8 NOT NULL default "",  
'pick_value` varchar(100) character set hp8 NOT NULL default "",  
PRIMARY KEY (`pick_id`)
```

Appendix O

12.15 Appendix O - Usability Heuristics

The analysis below looks at the ten usability heuristics developed by Nielsen (1990) a pioneer in heuristic evaluation.

Visibility of system status - The user should always know what state the web application is in at any given point (For example if ordering online, whether the order is complete or not).

Match the system to the real world - This is split into two main forms, use the natural language of the user, not jargon or systems terms, provide real-world conventions; provide natural mapping.

User control and freedom - This can be broken down to three elements, provide clearly marked exits, support undo and redo transactions and make it harder to perform irreversible actions.

Consistency and standards - Software developers have agreed on many standards, ensure these standards are upheld to ensure the users can find their way around your system quickly and easily.

Error prevention - Ensure all links are operational and any errors are not displayed in an overwhelming information heavy message to the user.

Recognition rather than recall - This is the careful balance between memorized information and obvious information displayed on the application such as labels etc. The general rule dictates the more information you can delegate to the interface without compromising its coherence and simplicity the better.

Flexibility and efficiency of use - As a general rule make default interfaces as simple as the task will allow, with more powerful (and optional) features hidden but available to the knowing intermediate or advance user.

Aesthetics and minimalist design - Find a balance between looks and simplicity. With the two extremes being a heavy flash site with movies and moving images against a simple bland site such with little to no un-required colours etc.

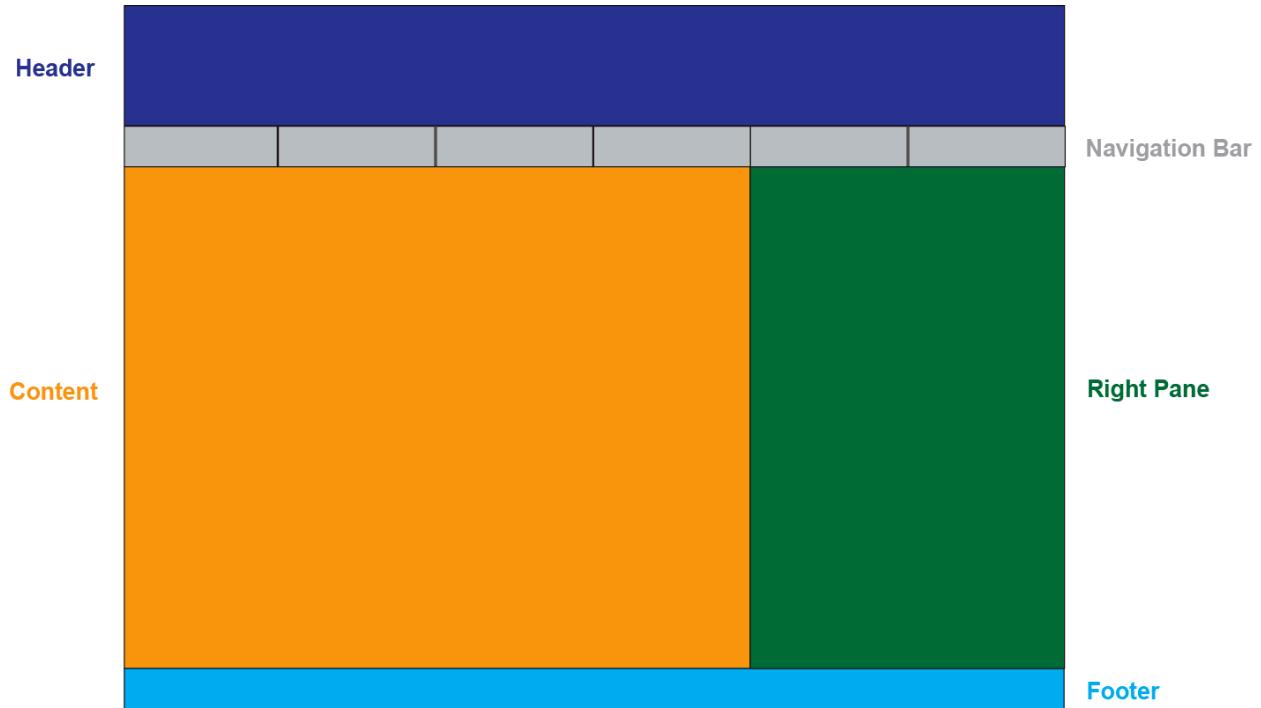
Help users recognize, diagnose and recover from errors - This can be ensured by ensuring the application incorporates good client-side validation and offers error messages when mistakes are made. (However when doing this ensure heuristic two is upheld).

Help and documentation - This heuristic if all others have been observed and implemented should not require much work. However no matter how well the application is designed it will still require a form of online help to ensure users know where to go if they do have difficulty using an aspect of the application.

Appendix P

12.16 Appendix P - GUI Designs

Template One



Example of Template One (www.digg.com)

The screenshot shows the Digg.com homepage. The top navigation bar includes links for News, Videos, Podcasts, and various categories like All Topics, Technology, Science, World, Business, Sports, Entertainment, and Gaming. The main content area displays news stories with titles, digg counts, and submission details. The right pane features a sidebar with 'What's Digg?' information, a 'Top 10 in All Topics' list, and other community links. The footer contains standard navigation links like Join, Login, and Search the News.

Header: Digg News Videos Podcasts^{beta}

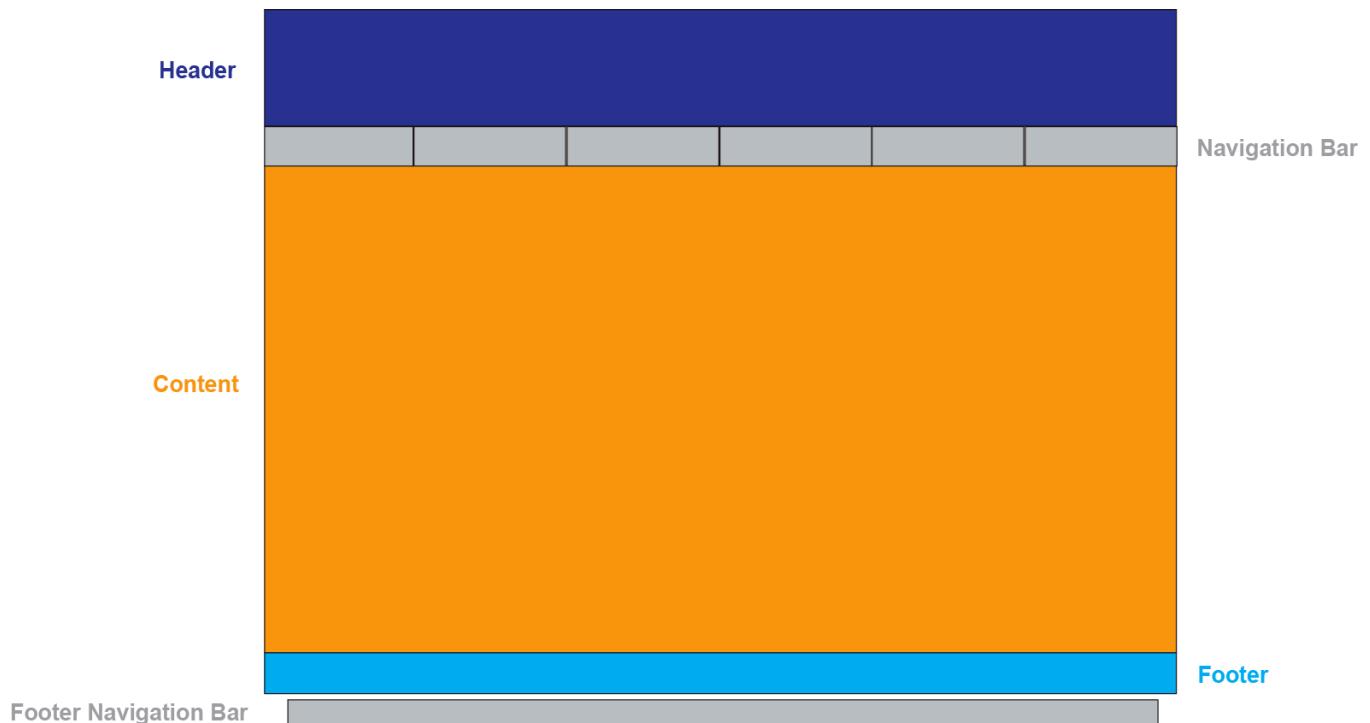
Navigation Bar: All Topics Technology Science World Business Sports Entertainment Gaming

Content: Manitou Lodge, Forks, WA
Olympic National Park Explore Rialto, Ruby, Shi-Shi Beach
www.manitoulodge.com

Right Pane: Take a puma for a walk
Bolivia & Peru with a difference 3 weeks project work and tour
www.questescapes.com

Footer: Popular Stories Upcoming Stories (3,842)

Template Two



Example of Template Two (www.theregister.com)

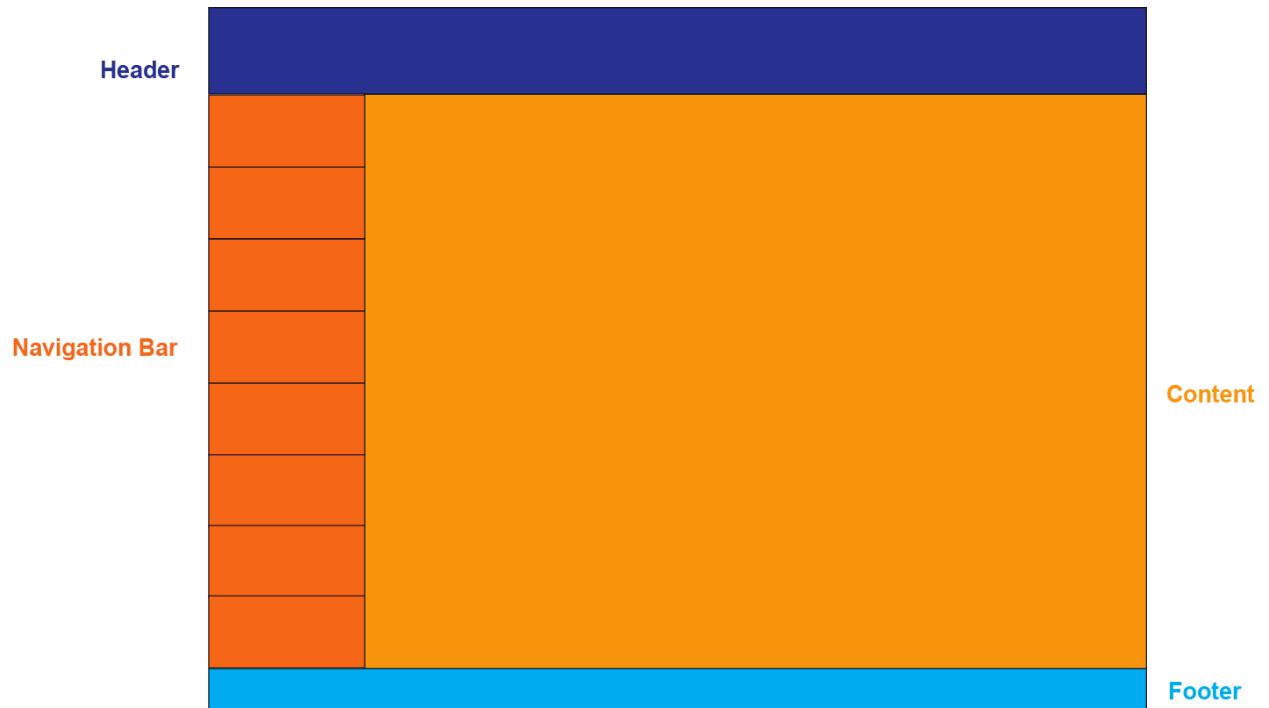
The screenshot shows the layout of The Register website. The green header contains the site's logo, 'The Register'. Below it is a navigation bar with categories: Hardware, Software, Music & Media, Comms, Security, Management, Science, and Odds & Sods. Sub-categories like Operating Systems, Applications, and Enterprise are listed below Software. The main content area features an image of a person working on a computer, an advertisement for Novell (Infrastructure for Innovation), and a news article titled 'Analysts look both ways at Vista' by Gavin Clarke. The content area also includes a sidebar with job search information. The footer navigation bar at the bottom has links for Home, News, Features, Reviews, and Columns.

Header → The Register

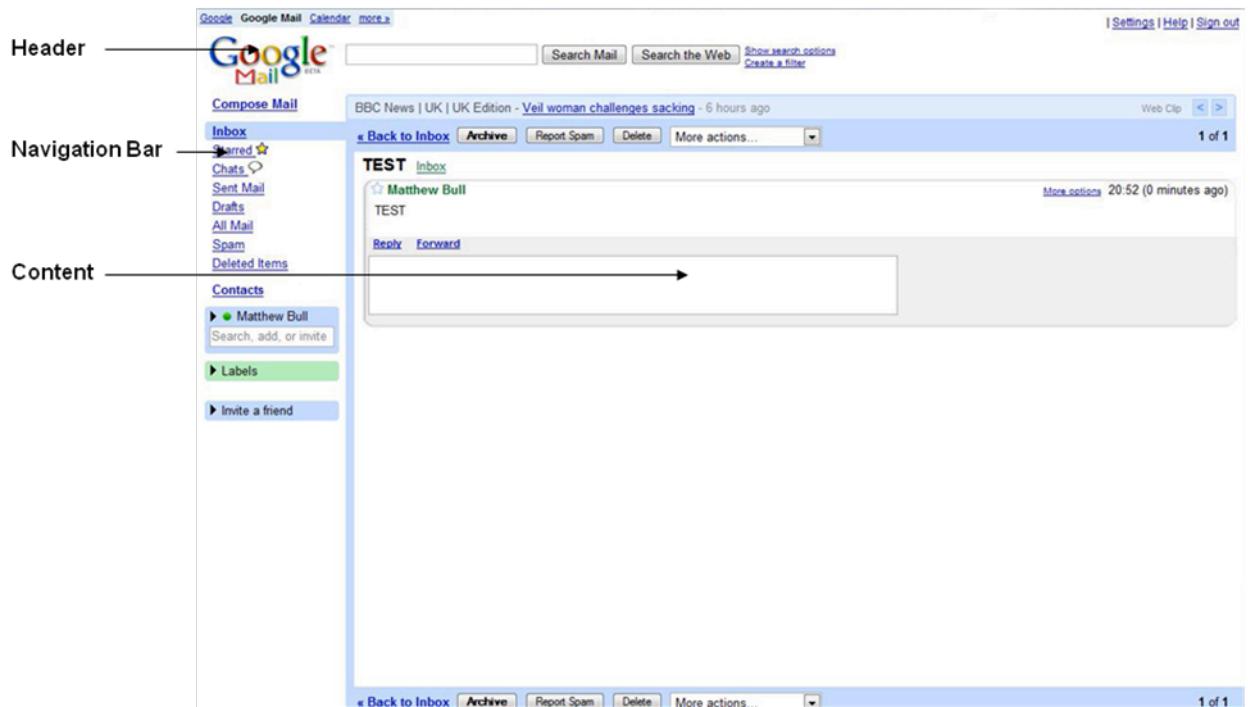
Navigation Bar → Hardware Software Music & Media Comms Security Management Science Odds & Sods
Operating Systems | Applications | Enterprise

Content → Analysts look both ways at Vista
Glazed over Windows
By Gavin Clarke → More by this author
Published Tuesday 28th November 2006 17:13 GMT
Find your perfect job - click here for thousands of tech vacancies.

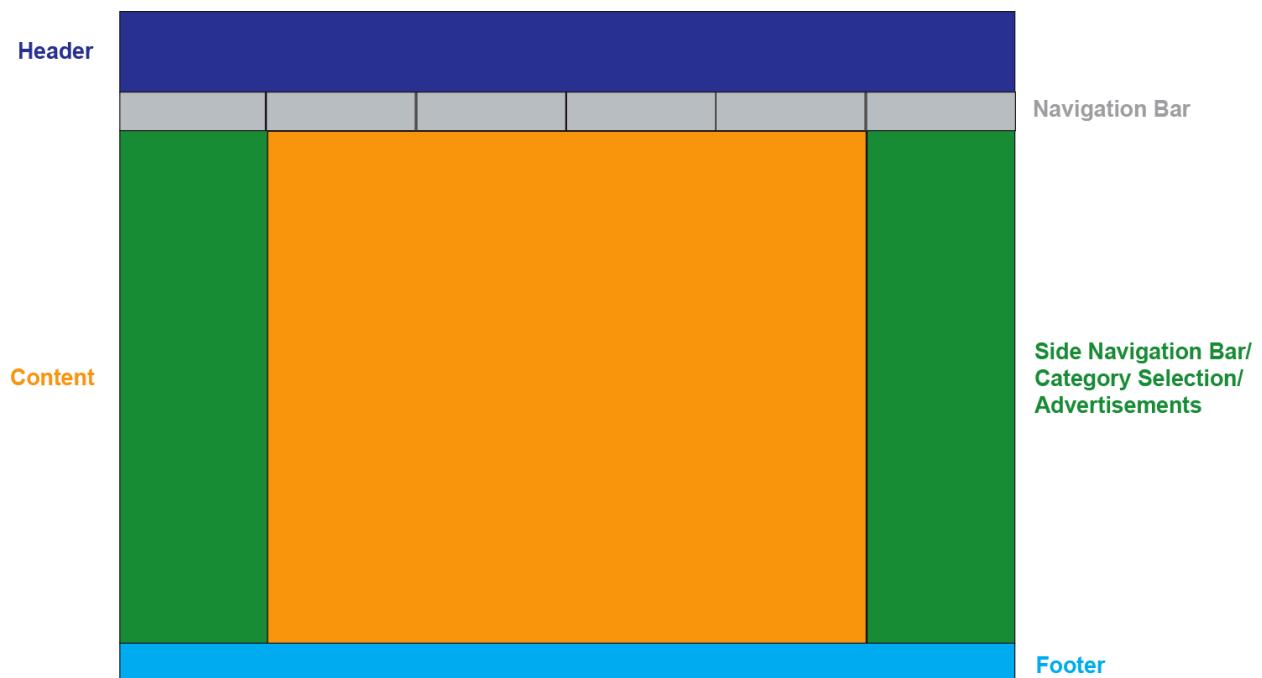
Template Three



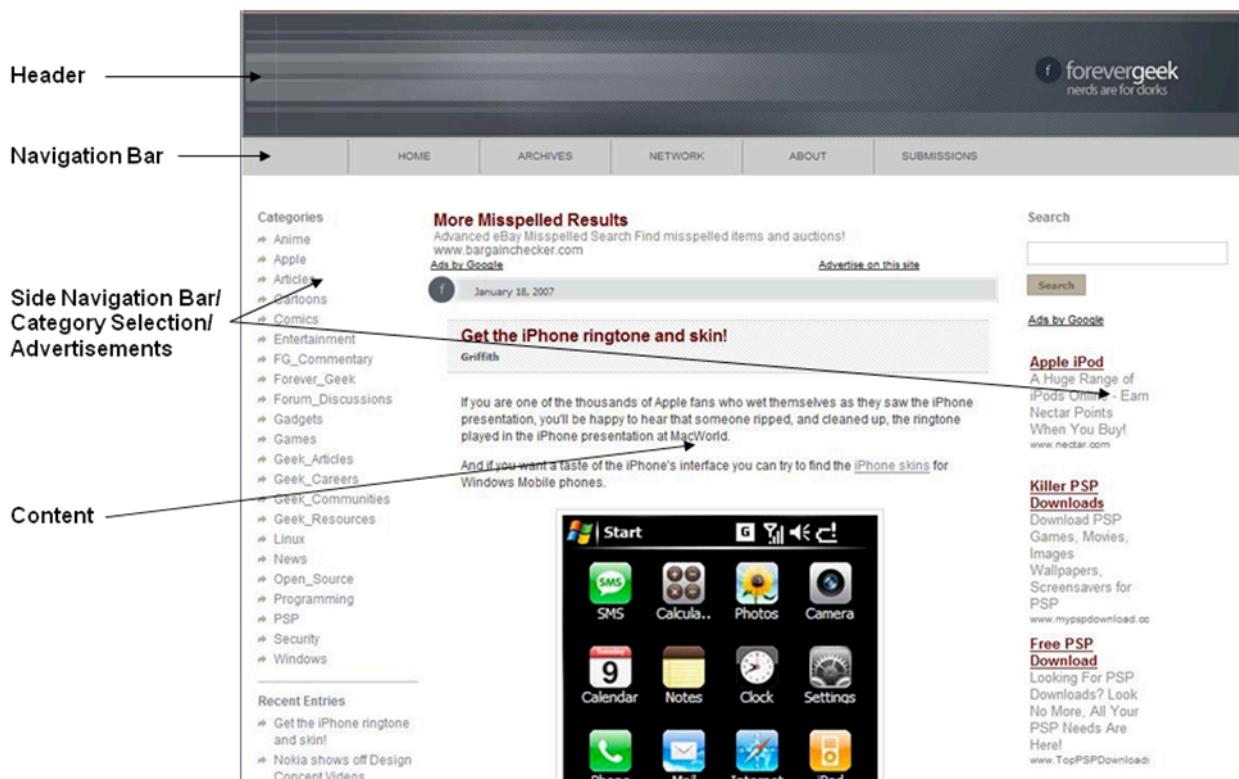
Example of Template Three (www.gmail.com)



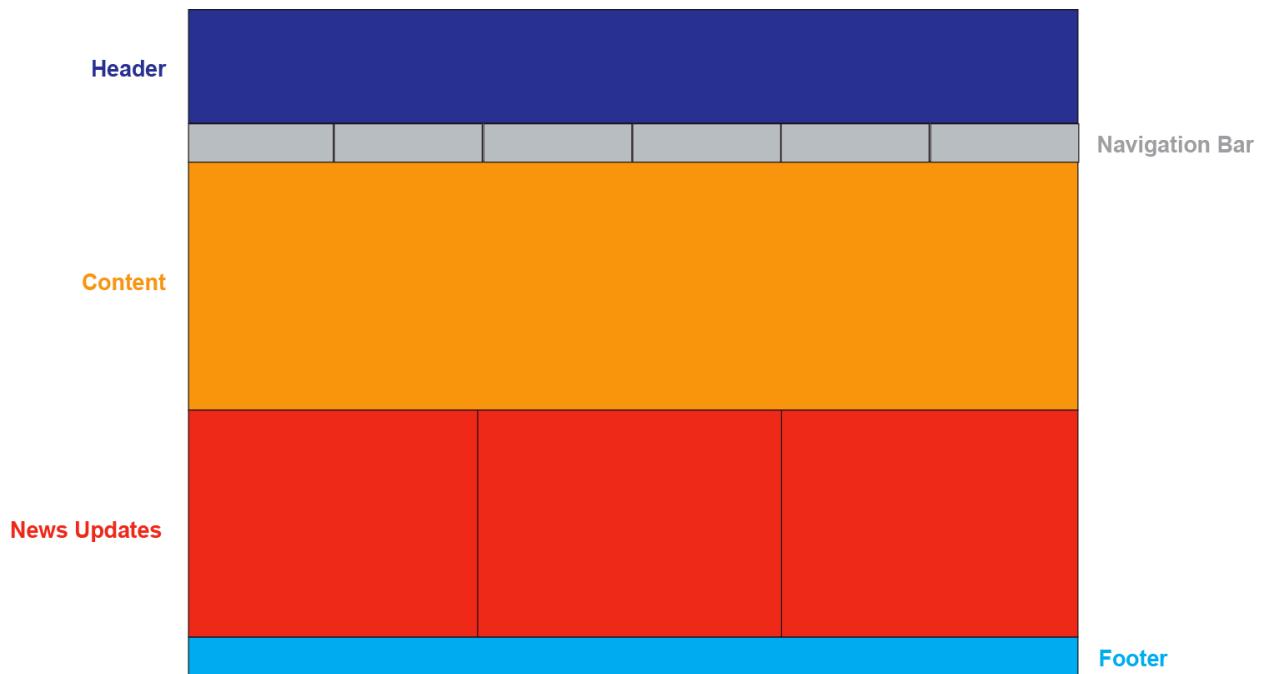
Template Four



Example of Template Four (www.forevergeek.com)



Template Five



Example of Template Five (www.futuremark.com)



Appendix Q

12.17 Appendix Q - Draft System Designs

Welcome to Dorney

Home	Clubs/Crews	Programme	Results	Reports	Contact Us
------	-------------	-----------	---------	---------	------------

Welcome

Content

Pictures/
Side Bar

Site Information	Admin Login
------------------	-------------

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

Welcome to Dorney

Home	Clubs/Crews	Programme	Results	Reports	Contact Us
------	-------------	-----------	---------	---------	------------

Registered Clubs

Information about how to use the page

Rowing Club	Association	Administrator	Control Options
Ryde	HDARA	James Bond	[View Registered Crews]
Poole	HDARA	John Smith	[View Details]
Bournemouth	HDARA	Jack Bauer	[View Details]
Castle Dore	WEARA	Clark Kent	[View Details]
Hastings	CARA	Rocky Balboa	[View Details]
Eastbourne	CARA	Peter Parker	[View Details]
Plymouth	WEARA	Jason Bourne	[View Details]

To report an issue or for help please click [here](#).

Site Information

James Bond
Address:
M16 / SIS
PO Box 1300
London SE1 1BD
England
E-mail:
jbond@email.com
Phone:
07476235007

Home | Clubs/Crews | Programme | Results | Reports | Contact Us

Full Admin Mode

[Home](#) [Clubs](#) [Crews](#) [Programme](#) [Results](#) [Accounts](#)

Register Rowing Club

Information about how to use the page

Rowing Club Name: Association:

Ryde HDARA

If the rowing club is not in the drop down box above please add them below.

Rowing Club Name: Association:

HDARA

To report an issue or for help please click [here](#).

[Admin Logout](#)

[Home](#) | [Clubs](#) | [Crews](#) | [Programme](#) | [Results](#) | [Accounts](#)

Full Admin Mode

[Home](#) [Clubs](#) [Crews](#) [Programme](#) [Results](#) [Accounts](#)

Register Crew

Please add crew information below.

Primary Competitors

Substitute Competitors

Regatta

Southcoast

Bow

Bow

Crew / Event

M54x

Two

Two

Designation

A

Three

Three

Stroke

Stroke

Cox

Cox

[Admin Logout](#)

[Home](#) | [Clubs](#) | [Crews](#) | [Programme](#) | [Results](#) | [Accounts](#)

Appendix R

12.18 Appendix R - L.A.M.P

The acronym LAMP refers to a solution stack of software programs, commonly free software programs, used together to run dynamic Web sites or servers:

- Linux, (referring to the operating system);
- Apache, the Web server;
- MySQL, the database management system (or database server);
- PHP (Sometimes Perl or Python), the programming language.

The combination of these technologies is used primarily to define a web server infrastructure, define a programming paradigm of developing software, and establish a software distribution package.

Though the originators of these open source programs did not design them all to work specifically with each other, the combination has become popular because of its low acquisition cost and because of the ubiquity of its components (which come bundled with most current Linux distributions particularly as deployed by ISPs). When used in combination they represent a solution stack of technologies that support application servers. Other such stacks include unified application development environments such as Apple Computer's WebObjects, Java/Java EE, Grails, and Microsoft's .NET architecture.

The scripting component of the LAMP stack has its origins in the CGI web interfaces that became popular in the early 1990s. This technology allows the user of a web browser to execute a program on the web server, and to thereby receive dynamic as well as static content. Programmers used scripting languages with these programs because of their ability to manipulate text streams easily and efficiently, even when they originate from disparate sources. For this reason system designers often referred to such scripting systems as glue languages.

Michael Kunze coined the acronym LAMP in an article for the German computing magazine. The article aimed to show that a bundle of free software could provide a viable alternative to commercial packages. Knowing about the IT-world's love of acronyms, Kunze came up with LAMP as a marketing-like term to popularize the use of free software. O'Reilly and MySQL AB have popularized the term among English-speakers. Indeed, MySQL AB has since based some of its marketing efforts on the popularity of the LAMP stack.

Referenced from the L.A.M.P Software Bundle Wiki

Appendix S

12.19 Appendix S - Hosting

eHosting

Established for 8 years and based in the UK, we offer a truly customer focused approach to hosting. Constant investment in our network and staff ensures that ehosting provides a high quality and professional array of services.

Pricing	eS Lite	eS Classic	eS Professional	eS Enterprise
Monthly Price	£2.49 ¹	£4.49 ¹	£7.49 ¹	£12.49 ¹
Setup Fee	Free	Free	Free	Free
	more info	more info	more info	more info
	buy now	buy now	buy now	buy now
Features				
Disk Storage	500 MB	1000 MB	2000 MB	5000 MB
Bandwidth	10 GB	15 GB	20 GB	30 GB
Domain Names	1	1	1	1
Multi Domain Support	10 ²	10 ²	10 ²	10 ²
SubDomains	0	4	8	16
Web Users	0	4	8	16
MS SQL Databases ³	0	1	2	6
MySQL Databases	0	2	6	12
E-Mail				
Mailboxes	50	100	200	500
Auto Responders	0	4	8	16
Mailing Lists	0	4	8	16
Support				
✓ 24/7 E-Mail Support				
✓ 8:30 AM - 5:30 PM Phone Support				
✓ Extensive Online Support Site				
Programming				
✓ Frontpage 2002 Extensions				
✓ Active Server Pages (ASP) ³				
✓ ASP.NET ³				
✓ PHP 4				
✓ PERL (CGI-BIN Support)				
Advanced Features				
✓ Graphical Statistics available at no extra cost				
✓ Custom Error Pages				
✓ Daily Server Backups				
✓ 24/7 Network and Server Monitoring				
✓ Redundant Power backed up by UPS and Generators				
✓ Choice of Server Operating Systems - Linux or Windows 2003 Server				

Data collected from www.ehosting.co.uk (October 2006)

Rackspace Managed Hosting

Rackspace specialise in Managed Hosting providing flexible contract options and customised solutions. Customers also get the best customer service, Fanatical Support(tm) with many business critical features e.g. 100% network uptime, 1 hour hardware fix, 24/7/365 technical support.

	SAMPLE ONE	SAMPLE TWO	SAMPLE THREE
Processor	Single AMD Athlon™ 64 3200	Dual AMD Opteron 246 2.0 GHz	HP DL385 AMD Opteron 270 2.0GHz Dual Core
Memory	1 GB DDR RAM	1 GB DDR RAM	1 GB DDR2 SDRAM
Storage	80GB EIDE HD	2 x 73GB SCSI HD	2 x 73GB SCSI HD
Connection	100GB monthly	100GB monthly	100GB monthly
Backup	25GB Backup weekly	25GB Backup weekly	25GB Backup weekly
Protection	Cisco 501 Firewall	Cisco 506 Firewall	Cisco 506 Firewall
Suitable for	Company sites	Ecommerce sites	High traffic sites

▶ GET A QUOTE ▶ GET A QUOTE ▶ GET A QUOTE

POPULAR UPGRADE OPTIONS

- Managed Firewall
- MySQL Server
- Urchin Web Stats Reporting
- Verisign SSL Certificates

INCLUDED INSTALLED SOFTWARE

- Apache
- Open SSH
- Sendmail
- GCC
- Perl
- Bind
- Kernel
- PostgreSQL
- Glibc
- MySQL
- PHP
- WebMin
- Python

ALL RACKSPACE MANAGED HOSTING SOLUTIONS INCLUDE:

- Zero-Downtime Network with money-back guarantee
- Industry leading 1-Hour Hardware Replacement with money-back guarantee
- Unlimited access to 24x7x365 dedicated support team including Level 3 Tech Support
- Award-winning MyRackspace customer portal
- Instant Emergency Response
- Full administrative access
- Fully resilient DNS infrastructure
- Automated Red Hat Security Patching
- Free Incoming Bandwidth
- Tier-1 network utilising multiple bandwidth providers such as MCI, Sprint, Tiscali, Abovenet and LINX

Data collected from www.rackspace.co.uk (October 2006)

NetPivotal

New Business and Developer Plans - Host Multiple Domains! From 2000Mb Webspace and 80Gb Bandwidth only £3.99/mo. FREE Domain Name for Life, FREE Set-Up - NO HIDDEN CHARGES, FREE 24/7 Tech Support, FREE Web Stats, Microsoft FrontPage Support, PHP, MYSQL, 100% MONEY BACK GUARANTEE.

Package features	Home Plan	Business Plan	Developer Plan
			
Disk space	2,000MB Disk space	4,000MB Disk space	6,000MB Disk space
GB/month Data Transfer	80GB Bandwidth	100GB Bandwidth	160GB Bandwidth
Hosted Domains	One Domain	One Domain	Eight Domains
Sub Domains	10 Sub domains	20 Sub domains	30 Sub domains
MySQL Database	5 MySQL databases	10 MySQL databases	15 MySQL databases
Price per month	£3.99 + VAT	£6.49 + VAT	£8.99 + VAT
	Buy Now	Buy Now	Buy Now
Platform features	Home Plan	Business Plan	Developer Plan
Multiple Domains	X	X	✓
SMTP Services	X	✓	✓
www.YourName.com	✓	✓	✓
.com, .net, .org, .co.uk	✓	✓	✓
Parked Domains	Unlimited	Unlimited	Unlimited
FrontPage Support (98-2003)	✓	✓	✓
Web Based Control Panel	✓	✓	✓
FREE 24/7 Tech Support	✓	✓	✓
Unlimited 24/7 FTP	✓	✓	✓
ODBC Support	Requires Windows platform	Requires Windows platform	Requires Windows platform
Perl	✓	✓	✓
Python	✓	✓	✓
PHP	✓	✓	✓
Apache ASP	✓	✓	✓
Ruby on Rails Support	✓	✓	✓
Microsoft ASP	Requires Windows platform	Requires Windows platform	Requires Windows platform
ASP.NET (1.1 / 2.0)	Requires Windows platform	Requires Windows platform	Requires Windows platform

Data collected from www.netpivotal.co.uk (October 2006)

Appendix T

12.20 Appendix T - Netpivotal

Red Hat Linux Operation System and Apache v2.0 HTTP Server

General Specification

Disk Space	2,000MB
Month Data Transfer (Bandwidth)	80GB
Hosted Domains	1
Sub Domains	10
MySQL Databases	5

Programming and Scripting Language Support

PHP
Perl
Python
Apache ASP
Ruby on Rails

PHPMyAdmin
CGI Directory
JAVA Applet Support
Flash, Shockwave Support
HTTP Streaming Audio/Video Support

Platform Support

24x7 Technical Support
Unlimited 24x7 FTP Connections

Diesel Generator Back-up
UPS Power Back-up
Five High Speed Internet Connections

Data collected from www.netpivotal.co.uk (October 2006)

Appendix U

12.21 Appendix U - Iteration One Screen Shots

Standard User

Home Page

Registered Clubs/Crews

ROWING CLUB	ASSOCIATION	ADMINISTRATOR	CONTROL OPTIONS
Poole	HDARA	Jon Bond	[View Registered Crews]
Ryde	HDARA	Steve Bull	[View Registered Crews]
Bexhill	CARA	Ollie McPhee	[View Registered Crews]
Bideford	WEARA	James Bate	[View Registered Crews]
BTC	HDARA	Chris Pettigrew	[View Registered Crews]
Hastings	CARA	Matthew Simmons	[View Registered Crews]
Eastbourne	CARA	Sarah Morris	[View Registered Crews]
Plymouth	WEARA	Nick Wells	[View Registered Crews]
Castle Dore	WEARA	James Doughty	[View Registered Crews]
Bmouth	HDARA	Chris Wilson	[View Registered Crews]

To report an issue please click [here](#).

Jon Bond
Address:
 27 Easter Road
 Moordown
 Bournemouth
 Dorset
 BH9 1SW
Phone:
 077476832
E-Mail:
 jbond@email.com

Registered Crews



Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Registered Crews

The table below displays information for the registered crews, the competitors shown are the **primary** competitors for each crew. To view the substitute competitors please click the link below the table.

EVENT/CREW	EVENT TYPE	BOW	THREE	TWO	STROKE	COX
MS4x A	Championship	Bill	Bill	Bill	Bill	Bill
MJS4x A	Championship	John	John	John	John	John
MJ4x A	Championship	Frank	Frank	Frank	Frank	Frank
MN4x A	Championship	James	James	James	James	James
MS4x A	Invitation	Leo	Leo	Leo	Leo	Leo
MJS4x A	Invitation	Jon	Jon	Jon	Jon	Jon
WS4x A	Invitation	Matt	Matt	Matt	Matt	Matt

[View Substitute Competitors]

[Back](#)

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Administrator Login



Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Admin Login

This administration section will allow rowing club secretaries to register their crews online. As well as offer additional useful tools.

Please login below using your username and password.

Username:

Password:

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#)

A photograph of a white swan swimming on a lake, with some reeds in the foreground and buildings in the background.

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Full Administrator

Home Page

Welcome Matthew

Please select an option from the navigation bar above.

The headers below explain what options are available for each section of the navigation bar.

Home
This Page - (To return to this page at any time just click the home button).

Register Clubs
Allows you to enter new rowing clubs for the south coast championship regatta. This section also allows you to view, edit and delete rowing clubs that have already entered. This process must be completed before a rowing club administrator can be assigned or any crews can be entered.

Register Crews
Allows you to enter new crews for any registered rowing club. This section also allows you to view, edit and delete crews that have already entered.

Programme
Displays which crews are entered for which events and allows for the south coast championship programme to be created or modified.

Results
Allows you to enter results of the races as well view, edit and delete the results.

Administrator Accounts
Displays information and control options for the administrator accounts you have access to.

[Admin Logout](#)

Registered Rowing Clubs

Registered Rowing Clubs

The table below displays information and control options for the rowing clubs that have registered.

ROWING CLUB	ASSOCIATION	OPTIONS
Bmouth	HDARA	[Edit] - [Delete]
Ryde	HDARA	[Edit] - [Delete]
Poole	HDARA	[Edit] - [Delete]
Bexhill	CARA	[Edit] - [Delete]
Bideford	WEARA	[Edit] - [Delete]
BTC	HDARA	[Edit] - [Delete]
Hastings	CARA	[Edit] - [Delete]
Eastbourne	CARA	[Edit] - [Delete]
Plymouth	WEARA	[Edit] - [Delete]
Castle Dore	WEARA	[Edit] - [Delete]

To report an issue please click [here](#).

[Admin Logout](#)

Register New Rowing Club



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Register Rowing Clubs

Please complete the fields below and click "Save" when finished. To return to the previous page please click "Back".

Rowing Club Name: Association:

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) [Admin Logout](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Registered Crews (Pick Rowing Club)



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Registered Crews

The table below shows a list of all rowing clubs currently entered in the south coast championship regatta. To view further details or enter new crews please click "View Registered Crews" for the specific rowing club.

If you have any questions you would like to ask an administrator of a rowing club please hover over their name below for contact details.

ROWING CLUB	ASSOCIATION	ADMINISTRATOR	CONTROL OPTIONS
Poole	HDARA	Jon Bond	[View Registered Crews]
Ryde	HDARA	Steve Bull	[View Registered Crews]
Bexhill	CARA	Ollie McPhee	[View Registered Crews]
Bideford	WEARA	James Bate	[View Registered Crews]
BTC	HDARA	Chris Pettigrew	[View Registered Crews]
Hastings	CARA	Matthew Simmons	[View Registered Crews]
Eastbourne	CARA	Sarah Morris	[View Registered Crews]
Plymouth	WEARA	Nick Wells	[View Registered Crews]
Castle Dore	WEARA	James Doughty	[View Registered Crews]
Bmouth	HDARA	Chris Wilson	[View Registered Crews]

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) [Admin Logout](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Registered Crews



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Registered Crews

The table below displays information for the registered crews, the competitors shown are the **primary** competitors for each crew. To view the substitute competitors please click the link below the table.

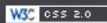
[Register New Crew]

EVENT/CREW	EVENT TYPE	BOW	THREE	TWO	STROKE	COX	CONTROL OPTIONS
MS4x A	Championship	Adam	Adam	Adam	Adam	Adam	[Edit] [Delete]
MJS4x A	Championship	Bill	Bill	Bill	Bill	Bill	[Edit] [Delete]
MJ4x A	Championship	Chris	Chris	Chris	Chris	Chris	[Edit] [Delete]
MN4x A	Championship	Jim	Jim	Jim	Jim	Jim	[Edit] [Delete]
MS4x A	Invitation	Matthew Bull	Chris Walker	Lee Bennett	Mike Palin	Ash Maitland	[Edit] [Delete]

[View Substitute Competitors]

Back

To report an issue please click [here](#).

  Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Register Crew



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Register Crew

Please complete the fields below and click save when finished. To return to the previous page please click back.

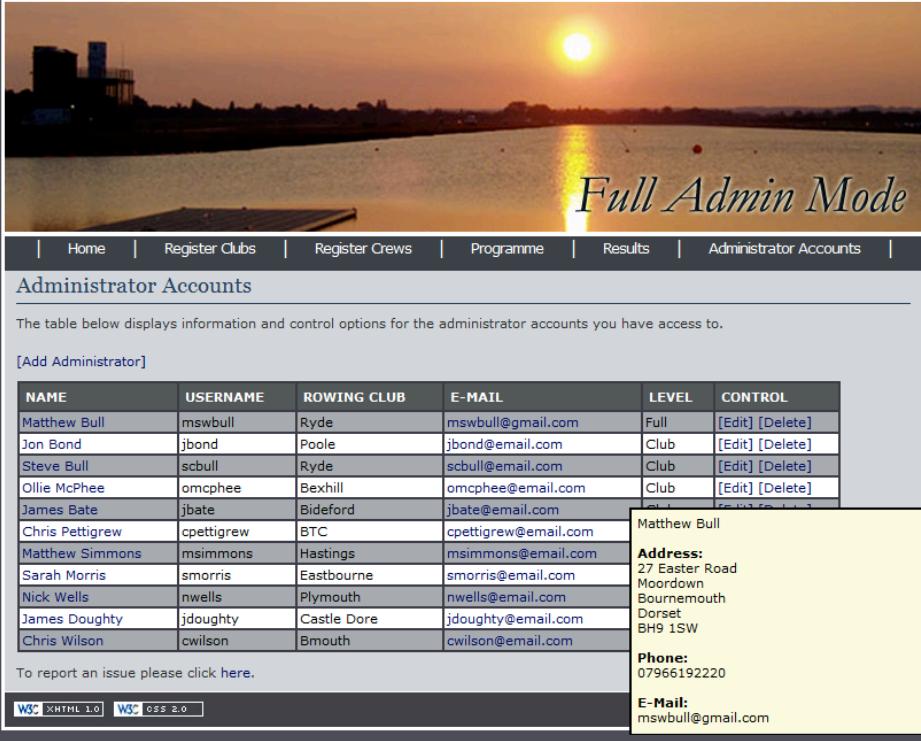
Crew Information	Primary Competitors	Substitute Competitors
Event	Bow	Bow
Crew Designation	Two	Two
	Three	Three
	Stroke	Stroke
	Cox	

Back

  Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Administrator Account Management



The screenshot shows a website titled "Full Admin Mode" with a sunset background image. The main menu includes Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts. Below the menu, a section titled "Administrator Accounts" displays a table of users:

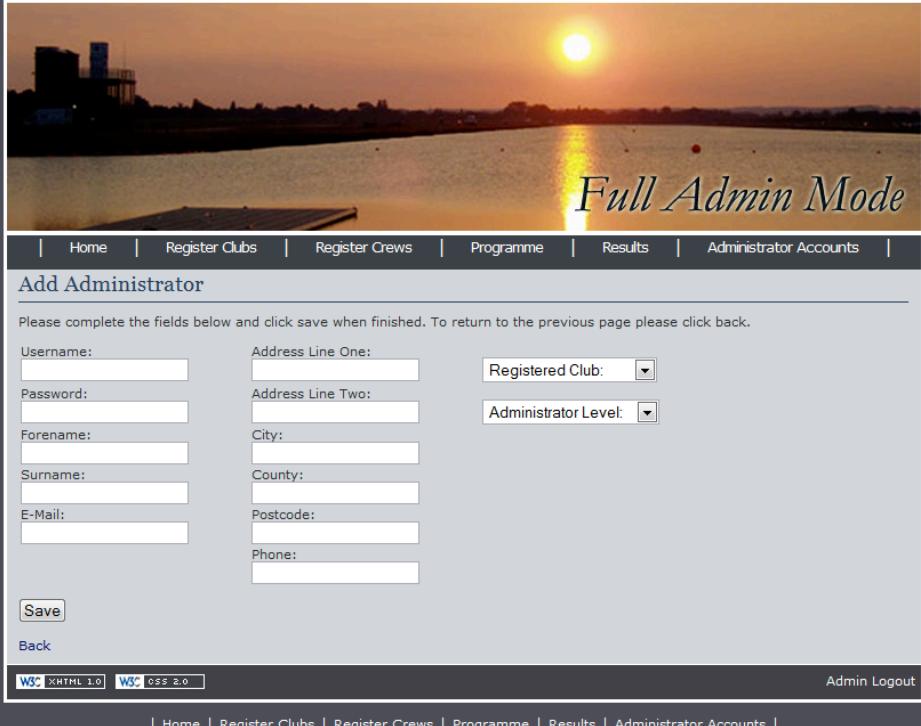
NAME	USERNAME	ROWING CLUB	E-MAIL	LEVEL	CONTROL
Matthew Bull	mswbull	Ryde	mswbull@gmail.com	Full	[Edit] [Delete]
Jon Bond	jbond	Poole	jbond@email.com	Club	[Edit] [Delete]
Steve Bull	scbull	Ryde	scbull@email.com	Club	[Edit] [Delete]
Ollie McPhee	omcphee	Bexhill	omcphee@email.com	Club	[Edit] [Delete]
James Bate	jbate	Bideford	jbate@email.com	Club	[Edit] [Delete]
Chris Pettigrew	cgettigrew	BTC	cgettigrew@email.com	Club	[Edit] [Delete]
Matthew Simmons	msimmons	Hastings	msimmons@email.com	Club	[Edit] [Delete]
Sarah Morris	smorris	Eastbourne	smorris@email.com	Club	[Edit] [Delete]
Nick Wells	nwells	Plymouth	nwells@email.com	Club	[Edit] [Delete]
James Doughty	jdoughty	Castle Dore	jdoughty@email.com	Club	[Edit] [Delete]
Chris Wilson	cwilson	Bmouth	cwilson@email.com	Club	[Edit] [Delete]

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Add Administrator



The screenshot shows a "Add Administrator" page with a sunset background image. The main menu is identical to the previous page. The "Add Administrator" section contains a form with the following fields:

Username:	Address Line One:	Registered Club:
Password:	Address Line Two:	Administrator Level:
Forename:	City:	
Surname:	County:	
E-Mail:	Postcode:	
	Phone:	

[Save](#) [Back](#)

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Club Administrator

Home Page

Welcome Jon

Please select an option from the navigation bar above.

The headers below explain what options are available for each section of the navigation bar.

Home
This Page - (To return to this page at any time just click the home button).

Register Crews
Allows you to enter new crews for the south coast championship regatta. This section also allows you to view, edit and delete crews that your rowing club have already entered.

Administrator Account
Displays information and control options for your rowing club administrator account.

W3C XHTML 1.0 | W3C CSS 2.0 | Admin Logout

Registered Crews

EVENT/CREW	EVENT TYPE	BOW	THREE	TWO	STROKE	COX	CONTROL OPTIONS
MS4x A	Championship	Bill	Bill	Bill	Bill	Bill	[Edit] [Delete]
MJS4x A	Championship	John	John	John	John	John	[Edit] [Delete]
MJ4x A	Championship	Frank	Frank	Frank	Frank	Frank	[Edit] [Delete]
MN4x A	Championship	James	James	James	James	James	[Edit] [Delete]
MS4x A	Invitation	Leo	Leo	Leo	Leo	Leo	[Edit] [Delete]
MJS4x A	Invitation	Jon	Jon	Jon	Jon	Jon	[Edit] [Delete]
WS4x A	Invitation	Matt	Matt	Matt	Matt	Matt	[Edit] [Delete]

[View Substitute Competitors]

To report an issue please click [here](#).

W3C XHTML 1.0 | W3C CSS 2.0 | Admin Logout

Register Crew



Club Admin Mode

| Home | Register Crews | Administrator Account |

Register Crew

Please complete the fields below and click save when finished. To return to the previous page please click back.

Crew Information	Primary Competitors	Substitute Competitors
Event	Bow	Bow
Crew Designation	Two	Two
	Three	Three
	Stroke	Stroke
	Cox	

Save

Back

W3C XHTML 1.0 **W3C CSS 2.0** **Admin Logout**

| Home | Register Crews | Administrator Account |

Edit Account Details



Club Admin Mode

| Home | Register Crews | Administrator Account |

Edit Administrator

Please update the fields below and click save when finished. To return to the previous page please click back.

Username:	Address Line One:
jbond	27 Easter Road
Password:	Address Line Two:
****	Moordown
Forename:	City:
Jon	Bournemouth
Surname:	County:
Bond	Dorset
E-Mail:	Postcode:
jbond@email.com	BH9 1SW
	Phone:
	077476832

Save

Back

W3C XHTML 1.0 **W3C CSS 2.0** **Admin Logout**

| Home | Register Crews | Administrator Account |

Appendix V

12.22 Appendix V - Iteration Two Screen Shots

Standard User

View Programme

Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Programme - Events

Please click "View Event Details" for the specific event to see the crews entered.

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View Event Details]
MJS4x	Championship	[View Event Details]
MJ4x	Championship	[View Event Details]
MN4x	Championship	[View Event Details]
WS4x	Championship	[View Event Details]
WJ4x	Championship	[View Event Details]
WN4x	Championship	[View Event Details]
MS4x	Invitation	[View Event Details]
MJS4x	Invitation	[View Event Details]
MJ4x	Invitation	[View Event Details]
MN4x	Invitation	[View Event Details]
WS4x	Invitation	[View Event Details]
WJ4x	Invitation	[View Event Details]
WN4x	Invitation	[View Event Details]

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

View Programme Details

Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Programme - Event Details

Please click "View Crew Details" for the specific crew to see the competitors.

ROWING CLUB/CREW	CONTROL OPTIONS
Ryde A	[View Crew Details]
Poole A	[View Crew Details]
Bexhill A	[View Crew Details]
Bexhill B	[View Crew Details]
Bideford A	[View Crew Details]
BTC A	[View Crew Details]
BTC B	[View Crew Details]
Hastings A	[View Crew Details]
Eastbourne A	[View Crew Details]
Plymouth A	[View Crew Details]
Castle Dore A	[View Crew Details]
Bmouth A	[View Crew Details]

[Back](#)
To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

View Crew Details



Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Programme - Crew Details

	BOW	TWO	THREE	STROKE	COX
PRIMARY COMPETITORS	Bill	Bill	Bill	Bill	Bill
SUBSTITUTE COMPETITORS	Bob	Bob	Bob	Bob	Bill

[Back To Events](#)

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) [Admin Login](#)

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Full Administrator

Programme Management

Full Admin Mode

| Home | Register Clubs | Register Crews | **Programme** | Results | Administrator Accounts |

Programme Management

Please select a control option below.

[Create Programme](#)
[Delete Programme](#)
[View Programme](#)

For help using this page please click [here](#) to view the help file.
To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

View Programme

Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Programme - Events

Please click "View Event Details" for the specific event to see the crews entered.

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View Event Details]
MJS4x	Championship	[View Event Details]
MJ4x	Championship	[View Event Details]
MN4x	Championship	[View Event Details]
WS4x	Championship	[View Event Details]
WJ4x	Championship	[View Event Details]
WN4x	Championship	[View Event Details]
MS4x	Invitation	[View Event Details]
MJS4x	Invitation	[View Event Details]
MJ4x	Invitation	[View Event Details]
MN4x	Invitation	[View Event Details]
WS4x	Invitation	[View Event Details]
WJ4x	Invitation	[View Event Details]
WN4x	Invitation	[View Event Details]

[Back](#)
To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

View Programme Details



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Programme - Events

Please click "View Event Details" for the specific event to see the crews entered.

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View Event Details]
MJS4x	Championship	[View Event Details]
MJ4x	Championship	[View Event Details]
MN4x	Championship	[View Event Details]
WS4x	Championship	[View Event Details]
WJ4x	Championship	[View Event Details]
WN4x	Championship	[View Event Details]
MS4x	Invitation	[View Event Details]
MJS4x	Invitation	[View Event Details]
MJ4x	Invitation	[View Event Details]
MN4x	Invitation	[View Event Details]
WS4x	Invitation	[View Event Details]
WJ4x	Invitation	[View Event Details]
WN4x	Invitation	[View Event Details]

[Back](#)

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

View Crew Details



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Crew Details

	BOW	TWO	THREE	STROKE	COX
PRIMARY COMPETITORS	Bill	Bill	Bill	Bill	Bill
SUBSTITUTE COMPETITORS	Bob	Bob	Bob	Bob	Bill

[Back To Events](#)

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Appendix W

12.23 Appendix W - Iteration Three Screen Shots

Standard User

Results

Welcome to Dorney

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View Event Results]
MJS4x	Championship	[View Event Results]
MJ4x	Championship	[View Event Results]
MN4x	Championship	[View Event Results]
MS4x	Invitation	[View Event Results]
MJS4x	Invitation	[View Event Results]
WS4x	Invitation	[View Event Results]

Please click "View Event Results" for the specific event to see a full list of results and times.

To report an issue please click [here](#).

[WC XHTML 1.0](#) [WC CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Results Details

Welcome to Dorney

RESULT/POSITION	ROWING CLUB/CREW	TIME
1st	Ryde A	09:18:36
2nd	Bexhill A	09:18:38
3rd	Bmouth A	09:18:42
4th	Castle Dore A	09:19:12
5th	Plymouth A	09:19:32
6th	BTC A	09:19:39
7th	BTC B	09:19:42
8th	Eastbourne A	09:19:55
9th	Bexhill B	09:20:02
10th	Hastings A	09:20:12
11th	Poole A	09:20:20
12th	Bideford A	09:21:01

Event Results

Back

To report an issue please click [here](#).

[WC XHTML 1.0](#) [WC CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Full Administrator

Results

The page displays a navigation bar with links: Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts. Below the navigation is a section titled 'Results' containing a message: 'Please click "View/Add/Update Event Results" for the specific event to view, add or update results and times. (Please note only events with crews entered are shown here.)' A table lists events with their names and types, each with a link to 'View/Add/Update Event Results':

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View/Add/Update Event Results]
MJS4x	Championship	[View/Add/Update Event Results]
MJ4x	Championship	[View/Add/Update Event Results]
MN4x	Championship	[View/Add/Update Event Results]
MS4x	Invitation	[View/Add/Update Event Results]
MJS4x	Invitation	[View/Add/Update Event Results]
WS4x	Invitation	[View/Add/Update Event Results]

Below the table, a link says 'To report an issue please click [here](#)'. At the bottom, there are W3C validation links for XHTML 1.0 and CSS 2.0, and a 'Admin Logout' link.

Results Details

The page displays a navigation bar with links: Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts. Below the navigation is a section titled 'Event Results' containing a message: 'To add or update the result and time for a crew in this event please click "Add/Edit Result" for the specific crew.' A table lists results with their positions, rowing clubs/crews, times, and control options:

RESULT/POSITION	ROWING CLUB/CREW	TIME	CONTROL OPTIONS
1st	Ryde A	09:18:36	[Add/Edit Result]
2nd	Bexhill A	09:18:38	[Add/Edit Result]
3rd	Bmouth A	09:18:42	[Add/Edit Result]
4th	Castle Dore A	09:19:12	[Add/Edit Result]
5th	Plymouth A	09:19:32	[Add/Edit Result]
6th	BTC A	09:19:39	[Add/Edit Result]
7th	BTC B	09:19:42	[Add/Edit Result]
8th	Eastbourne A	09:19:55	[Add/Edit Result]

Below the table, a link says 'To report an issue please click [here](#)'. At the bottom, there are W3C validation links for XHTML 1.0 and CSS 2.0, and a 'Admin Logout' link.

Standard User

Reports

Welcome to Dorney



| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Reports

Tables

- [View Rowing Clubs Results](#)
Choose a Rowing Club and view a full list of all their crews' results and times.
- [View Rowing Clubs Points](#)
View a full list of Rowing Clubs and their points for the regatta.
- [View Associations Points](#)
View Associations accumulative points for the regatta.

Graphs

- [Rowing Clubs Crews Placed 1st](#)
View how many 1st placed crews each rowing club has for the regatta.
- [Rowing Clubs Crews Placed 2nd](#)
View how many 2nd placed crews each rowing club has for the regatta.
- [Rowing Clubs Crews Placed 3rd](#)
View how many 3rd placed crews each rowing club has for the regatta.
- [Rowing Clubs Points](#)
View the total number of points the rowing clubs have achieved in the regatta.
- [Associations Points](#)
View the total number of points the association have achieved in the regatta.

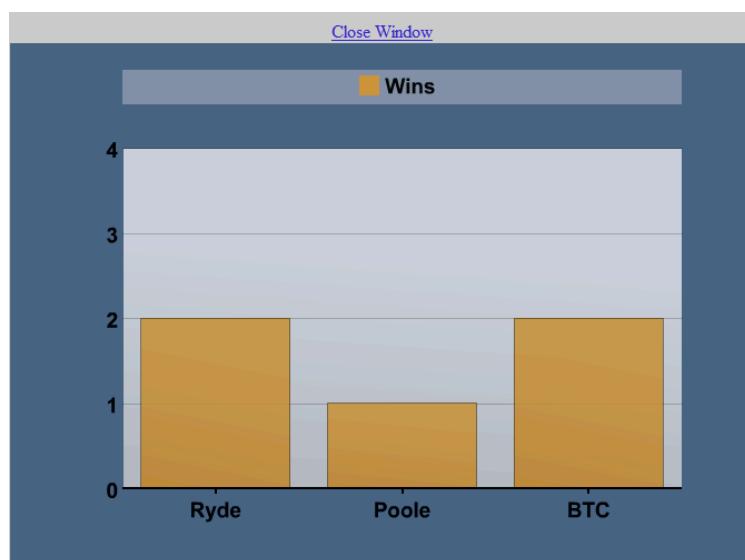
To report an issue please click here.



W3C XHTML 1.0 W3C CSS 2.0 Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Example graph



Appendix X

12.24 Appendix X - Test Plan

The test plan is split into four sections that have been colour coded throughout the test plan. These tests have been designed to cover all aspects of back-box and white-box testing ensuring that all aspects of the system are covered. (74 Tests in total).

Key:

System Tests

Standard User Tests

Full Administrator Tests

Club Administrator Tests

Test No.	Test	Expected Result	Result	Pass/Fail	Comments
1	Access Available	Hit www.matthewbull.com/dorneyscc	As Expected	Pass	None
2	Standard User: Header Navigation Working	Each Link directs to the correct page	As Expected	Pass	None
3	Standard User: Footer Navigation Working	Each Link directs to the correct page	As Expected	Pass	None
4	Standard User: Theme consistent	All pages for the Standard Users utilise the correct theme.	As Expected	Pass	None
5	Standard User: Content Area Displayed Correctly	All Content is clearly displayed in the content area	As Expected	Pass	None
6	Standard User: Report Issues Directing Correctly	Passed to the contact HDARA page	As Expected	Pass	None
7	Standard User: Contact us email system working	Email is sent with correct details	As Expected	Pass	None
8	Standard User: All Registered Rowing Clubs Displaying	Correct number of registered rowing clubs displaying on the registered clubs page	Ten, As Expected	Pass	None
9	Standard User: Hover Over Admin For Details Working	When hovering over the admin names the contact details are shown	As Expected	Pass	None
10	Standard User: All Registered Crews Displaying	Correct number of registered crews displaying on the registered crews page for a specific rowing club (Ryde)	Seven, As Expected	Pass	None
11	Standard User: Substitute Crews	Substitute crews button switches crews competitors	As Expected	Pass	None

	Button				
12	Standard User: Events Shown From View Programme	All fourteen events shown	As Expected	Pass	None
13	Standard User: Entered Crews For The Event Shown	All eight crews shown for the event MS4x	As Expected	Pass	None
14	Standard User: Crew Details Available From Programme	All crews details can be accessed from the programme page	As Expected	Pass	None
15	Standard User: Results Page	Seven events with crews are shown	As Expected	Pass	None
16	Standard User: Specific Event Results Displayed	MS4x displays full set of eight results	As Expected	Pass	None
17	Standard User: Reports Page - Table	The table “View Rowing Club Results” on the reports page displays	As Expected	Pass	None
18	Standard User: Reports Page - Graphs	The graph “Rowing Clubs in First Place” on the report page displays	As Expected	Pass	None
19	Standard User: Back Buttons Working	The back button takes you back one page with correct data	As Expected	Pass	None
20	Standard User: Images have Hover Over Text	Hovering over an image displays alternative text	As Expected	Pass	None
21	Full Administrator: Login	A full administrator can login into the system	As Expected	Pass	None
22	Login Error Box	An Error is shown if incorrect username or password is entered	As Expected	Pass	None
23	Non Admin Tries To Access Full Administrator Section Through False Details	Different user name and password used not allowed to enter system	As Expected	Pass	None
24	Non Admin Tries To Access Full Administrator Section Through URL	The user will be thrown back to the login page	As Expected	Pass	None
25	Full Administrator: Navigation Bars (Header and Footer) Updated	A new header and footer navigation bar will be shown with different options	As Expected	Pass	None
26	Full Administrator: Theme Updated	The administrators theme is updated from the standard user	As Expected	Pass	None
27	Full Administrator:	Each Link directs to the correct	As Expected	Pass	None

	Header Navigation Working	page			
28	Full Administrator: Footer Navigation Working	Each Link directs to the correct page	As Expected	Pass	None
29	Full Administrator: Theme consistent	All pages for the full administrators utilise the correct theme.	As Expected	Pass	None
30	Full Administrator: Content Area Displayed Correctly	All Content is clearly displayed in the content area	As Expected	Pass	None
31	Full Administrator: Report Issues Directing Correctly	Passed to the contact HDARA page	As Expected	Pass	None
32	Full Administrator: Contact us email system working	Email is sent with correct details	As Expected	Pass	None
33	Full Administrator: Register New Rowing Club	Can register new rowing club with the system	As Expected	Pass	None
34	Full Administrator: Register New Rowing Club Validation	Only associations from the drop down box can be selected	As Expected	Pass	None
35	Full Administrator: Edit Rowing Club	The rowing clubs details can be edited	As Expected	Pass	None
36	Full Administrator: Delete Rowing Club	The rowing clubs details can be deleted	As Expected	Pass	None
37	Full Administrator: Rowing Club Details Can Be Viewed	The rowing clubs details can be viewed including any newly entered rowing clubs	As Expected	Pass	None
38	Full Administrator: Register New Crew	Can register new crew for a specific rowing club (Ryde) with the system	As Expected	Pass	None
39	Full Administrator: Register New Crew Validation	All input fields only allow expected characters and drop down boxes operate as expected	As Expected	Pass	None
40	Full Administrator: Edit Crew	The crew details can be edited	As Expected	Pass	None
41	Full Administrator: Crew Delete	The crew details can be deleted	As Expected	Pass	None
42	Full Administrator: Crew Details Can Be Viewed	The crews details can be viewed including any newly entered crews	As Expected	Pass	None
43	Full Administrator: Programme	When the “Create Programme” button is selected the programme	As Expected	Pass	None

44	Generation Full Administrator: Validation Of Programme Generation	is automatically generated When the “Create Programme” button is pressed multiple times a warning box is displayed if “Continue” is selected the programme information will be overwritten	As Expected	Pass	None
45	Full Administrator: Delete Programme	Deletes all programme information	As Expected	Pass	None
46	Full Administrator: View Programme	The newly created programme is shown	As Expected	Pass	None
47	Full Administrator: Help Menu	When “Help” is selected from programme management page the help file is displayed	As Expected	Pass	None
48	Full Administrator: Results	The seven events with crews entered in them will be shown	As Expected	Pass	None
49	Full Administrator: Results Details	When the specific event (MS4x) is selected it will display the current results	Eight Crews Shown, As Expected	Pass	None
50	Full Administrator: Add/Update Results	A specific crews (Ryde A) results can be added or updated	As Expected	Pass	None
51	Full Administrator: Register New Administrator	Can register new administrator with the system	As Expected	Pass	None
52	Full Administrator: Register New Administrator Validation	All input fields only allow expected characters and drop down boxes operate as expected	As Expected	Pass	None
53	Full Administrator: Edit Administrator	The administrator details can be edited	As Expected	Pass	None
54	Full Administrator: Delete Administrator	The administrator details can be deleted	As Expected	Pass	None
55	Full Administrator: Administrator Details Can Be Viewed	The administrator details can be viewed including any newly created administrators	As Expected	Pass	None
56	Full Administrator: Logout	The administrator can logout of the system and be returned to standard user mode	As Expected	Pass	None
57	Club Administrator: Login	A club administrator can login into the system	As Expected	Pass	None
58	Club Administrator: Navigation Bars (Header and Footer) Updated	A new header and footer navigation bar will be shown with different options	As Expected	Pass	None
59	Club	The administrators theme is	As Expected	Pass	None

	Administrator: Theme Updated	updated from the standard user			
60	Club Administrator: Header Navigation Working	Each Link directs to the correct page	As Expected	Pass	None
61	Club Administrator: Footer Navigation Working	Each Link directs to the correct page	As Expected	Pass	None
62	Club Administrator: Theme consistent	All pages for the club administrators utilise the correct theme.	As Expected	Pass	None
63	Club Administrator: Content Area Displayed Correctly	All Content is clearly displayed in the content area	As Expected	Pass	None
64	Club Administrator: Report Issues Directing Correctly	Passed to the contact HDARA page	As Expected	Pass	None
65	Club Administrator: Contact us email system working	Email is sent with correct details	As Expected	Pass	None
66	Club Administrator: Restricted Access	The club administrators access and options are restricted to their own rowing club	As Expected	Pass	None
67	Club Administrator: Register New Crew	Can register new crew for their specific rowing club (Ryde) with the system	As Expected	Pass	None
68	Club Administrator: Register New Crew Validation	All input fields only allow expected characters and drop down boxes operate as expected	As Expected	Pass	None
69	Club Administrator: Edit Crew	The specific crew details can be edited	As Expected	Pass	None
70	Club Administrator: Crew Delete	The specific crew details can be deleted	As Expected	Pass	None
71	Club Administrator: Crew Details Can Be Viewed	The specific crews details can be viewed including any newly entered crews	As Expected	Pass	None
72	Club Administrator:	The club administrator can edit their own account details	As Expected	Pass	None

	Edit Account Details			
73	Club Administrator: Logout	The club administrator can logout of the system and be returned to standard user mode	As Expected	Pass
74	Application Compatibility	The application works as expected in all web browsers	As Expected	Minor bug in Firefox version 1 on login page.

Appendix Y

HANTS & DORSET AMATEUR ROWING ASSOCIATION
EVENT ORGANISER V1.0
USER MANUAL

Last Updated: - 11/03/2007

12.25 Appendix Y - User Manual

Contents Page

This user manual will be split into three sections.

Standard User - For all Users

- Accessing the Web Application
- Viewing Registered Rowing Clubs and their Crews
- Viewing the Regatta Programme
- Viewing Regatta Results
- Using the Reporting Features
- Getting Help

Full Administrator - Specifically For Full Administrators

- Logging In
- Registering a New Rowing Club
- Creating a New Administrator
- Registering Crews on behalf of a Rowing Club
- Programme Management
- Adding or Updating Results
- Logging Out

Rowing Club Administrator - Specifically For Rowing Club Administrators

- Logging In
- Administering Your Account
- Registering Crews for the Regatta
- Logging Out

Please refer to the specific sections that apply to you.

Standard User

Accessing the Web Application

This application is based entirely online. This means that any device that can access the world wide web can view use application.

It is accessed from the following address -

<http://www.matthewbull.com/dorneyssc>

The screen shot below shows this process with the Safari Web Browser, however all web browsers are supported. (Internet Explorer, Firefox, Opera etc).



Once entered you will be presented with the home page of the application as shown below.

A screenshot of the Dorney South Coast Championships 2007 website. The header features a large banner image of a rowing team in a boat on a lake. Below the banner is a navigation menu with links for Home, Registered Clubs/Crews, Programme, Results, Reports, and Contact Us. The main content area includes sections for the welcome message, the event details (Dorney South Coast Championships 2007), the Athlete's Championships, and the South Coast Championship Event Organiser. On the right side, there is a logo for the event featuring the text "SOUTH COAST CHAMPIONSHIPS", "DORNEY LAKE", and "8th SEPTEMBER 2007". At the bottom of the page, there are links for "Find Dorney - Photos of Dorney - www.DorneySCC.co.uk", a "Admin Login" button, and a footer navigation menu with links for Home, Registered Clubs/Crews, Programme, Results, Reports, and Contact Us.

View Registered Rowing Clubs and their Crews

This page is accessed by clicking the “Registered Clubs/Crews” button on the main navigation bar as shown in the image below.



The page displays a table listing the rowing clubs currently registered for the Regatta. The table can be sorted by column by clicking the individual titles. For details of the administrator of the specific rowing club hover over their name.

ROWING CLUB	ASSOCIATION	ADMINISTRATOR	CONTROL OPTIONS
Poole	HDARA	Jon Bond	[View Registered Crews]
Ryde	HDARA	Steve Bull	[View Registered Crews]
Bexhill	CARA	Ollie McPhee	[View Registered Crews]
Bideford	WEARA	James Bate	[View Registered Crews]
BTC	HDARA	Chris Pettigrew	[View Registered Crews]
Hastings	CARA	Matthew Simmons	[View Registered Crews]
Eastbourne	CARA	Sarah Morris	[View Registered Crews]
Plymouth	WEARA	Nick Wells	[View Registered Crews]
Castle Dore	WEARA	James Doughty	[View Registered Crews]
Bmouth	HDARA	Chris Wilson	[View Registered Crews]

To view which crews have been registered for a specific rowing club click the “View Registered Crews” button.

Once clicked the following page will be displayed.

Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Registered Crews

The table below displays information for the registered crews, the competitors shown are the **primary** competitors for each crew. To view the substitute competitors please click the link below the table.

EVENT/CREW	EVENT TYPE	BOW	THREE	TWO	STROKE	COX
MS4x A	Championship	Bill	Bill	Bill	Bill	Bill
MJS4x A	Championship	John	John	John	John	John
MJ4x A	Championship	Frank	Frank	Frank	Frank	Frank
MN4x A	Championship	James	James	James	James	James
MS4x A	Invitation	Leo	Leo	Leo	Leo	Leo
MJS4x A	Invitation	Jon	Jon	Jon	Jon	Jon
WS4x A	Invitation	Matt	Matt	Matt	Matt	Matt

[View Substitute Competitors]

Back

To report an issue please click here.

WC XHTML 1.0 WC CSS 2.0 Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

From here the substitute competitors for each crew can be toggled by clicking the “View Substitute Competitors” button.

Viewing the Regatta Programme

This page is accessed by clicking the “Programme” button on the main navigation bar as shown in the image below.



This page displays a table with list of all events taking place at the regatta. To view which crews have entered a specific event click the “View Event Details” button.

Welcome to Dorney



| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Programme - Events

Please click "View Event Details" for the specific event to see the crews entered.

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View Event Details]
MJS4x	Championship	[View Event Details]
MJ4x	Championship	[View Event Details]
MN4x	Championship	[View Event Details]
WS4x	Championship	[View Event Details]
WJ4x	Championship	[View Event Details]
WN4x	Championship	[View Event Details]
MS4x	Invitation	[View Event Details]
MJS4x	Invitation	[View Event Details]
MJ4x	Invitation	[View Event Details]
MN4x	Invitation	[View Event Details]
WS4x	Invitation	[View Event Details]
WJ4x	Invitation	[View Event Details]
WN4x	Invitation	[View Event Details]

To report an issue please click [here](#).

Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

The following page will display another table (shown below) showing the crews that are entered in the event. To view the crew details click the “View Crew Details” button.

ROWING CLUB/CREW	CONTROL OPTIONS
Ryde A	[View Crew Details]
Poole A	[View Crew Details]
Bexhill A	[View Crew Details]
Bexhill B	[View Crew Details]
Bideford A	[View Crew Details]
BTC A	[View Crew Details]
BTC B	[View Crew Details]
Hastings A	[View Crew Details]
Eastbourne A	[View Crew Details]
Plymouth A	[View Crew Details]
Castle Dore A	[View Crew Details]
Bmouth A	[View Crew Details]

The crew details page shown both the primary and substitute competitors for the specific crew as can be seen in the image below.

Welcome to Dorney

Programme - Crew Details

	BOW	TWO	THREE	STROKE	COX
PRIMARY COMPETITORS	Bill	Bill	Bill	Bill	Bill
SUBSTITUTE COMPETITORS	Bob	Bob	Bob	Bob	Bill

[Back To Events](#)

To report an issue please click [here](#).

[WC XHTML 1.0](#) [WC CSS 2.0](#) [Admin Login](#)

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Viewing Regatta Results

This page is accessed by clicking the “Results” button from the navigation bar as shown below.



This page displays a table with a list of events that have already got results entered. (See image below).

EVENT NAME	EVENT TYPE	CONTROL OPTIONS
MS4x	Championship	[View Event Results]
MJS4x	Championship	[View Event Results]
MJ4x	Championship	[View Event Results]
MN4x	Championship	[View Event Results]
MS4x	Invitation	[View Event Results]
MJS4x	Invitation	[View Event Results]
WS4x	Invitation	[View Event Results]

To view the specific events results the click “View Event Details” button. This will display a table with the events results in. It is important to be aware that these results are updated dynamically and instantly as they are entered into the system therefore this results page will always have the latest most up to date information. Please see the image on the following page for an example of the results page.



Welcome to Dorney

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Event Results

RESULT/POSITION	ROWING CLUB/CREW	TIME
1st	Ryde A	09:18:36
2nd	Bexhill A	09:18:38
3rd	Bmouth A	09:18:42
4th	Castle Dore A	09:19:12
5th	Plymouth A	09:19:32
6th	BTC A	09:19:39
7th	BTC B	09:19:42
8th	Eastbourne A	09:19:55
9th	Bexhill B	09:20:02
10th	Hastings A	09:20:12
11th	Poole A	09:20:20
12th	Bideford A	09:21:01

[Back](#)

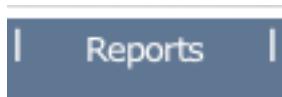
To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Login

| Home | Registered Clubs/Crews | Programme | Results | Reports | Contact Us |

Using the Reporting Features

This page is accessed by clicking the “Reports” button on the main navigation bar as shown in the image below.



The reports page allows you to run pre-created reports about the regatta. The reports are split into two types (Table and Graph). The available reports are listed below: -

Table Reports

View Rowing Clubs Results:

Choose a Rowing Club and view a full list of all their crews' results and times.

View Rowing Clubs Points:

View a full list of Rowing Clubs and their points for the regatta.

View Associations Points:

View Associations accumulative points for the regatta.

Graph Reports

Rowing Clubs Crews Placed 1st:

View how many 1st placed crews each rowing club has for the regatta.

Rowing Clubs Crews Placed 2nd:

View how many 2nd placed crews each rowing club has for the regatta.

Rowing Clubs Crews Placed 3rd:

View how many 3rd placed crews each rowing club has for the regatta.

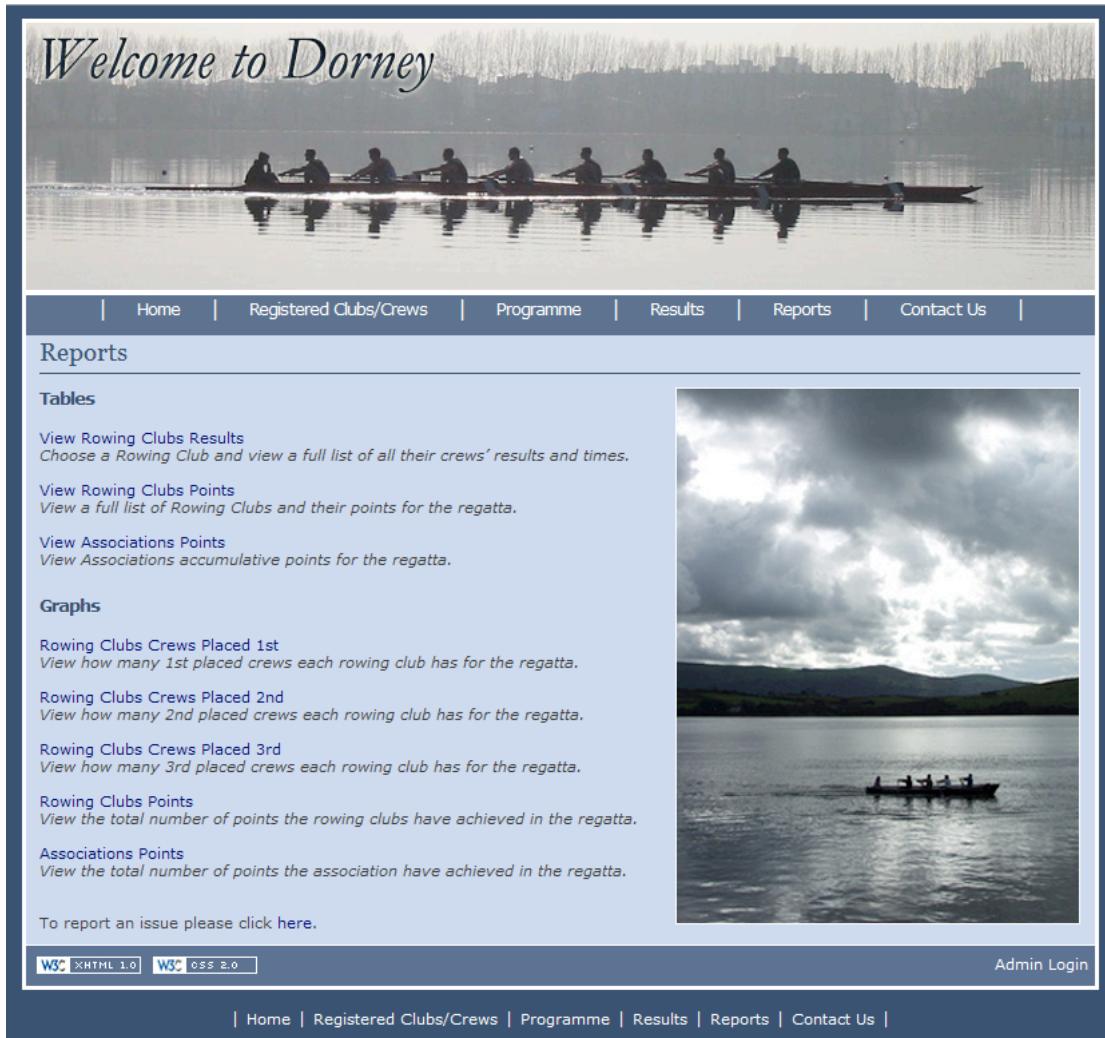
Rowing Clubs Points:

View the total number of points the rowing clubs have achieved in the regatta.

Associations Points:

View the total number of points the association have achieved in the regatta.

To run a specific report click the specific button. (The image below shows the reports page).



The screenshot shows the 'Reports' section of the Dorney Regatta website. At the top, there is a banner with the text 'Welcome to Dorney' and an image of a rowing team in a boat on a lake. Below the banner is a navigation bar with links for Home, Registered Clubs/Crews, Programme, Results, Reports, and Contact Us. The 'Reports' link is underlined, indicating it is the current page. The main content area is titled 'Tables' and contains three items: 'View Rowing Clubs Results', 'View Rowing Clubs Points', and 'View Associations Points'. To the right of this content is a large image of a rowing team on a lake under a cloudy sky. Below the 'Tables' section is a 'Graphs' section containing five items: 'Rowing Clubs Crews Placed 1st', 'Rowing Clubs Crews Placed 2nd', 'Rowing Clubs Crews Placed 3rd', 'Rowing Clubs Points', and 'Associations Points'. At the bottom of the page, there is a footer with links for Home, Registered Clubs/Crews, Programme, Results, Reports, and Contact Us, along with W3C XHTML 1.0 and W3C CSS 2.0 validation icons and an Admin Login link.

Getting Help

All pages of the application have explicit details on how to use the functions of the page. To further aid this process entire application has been designed with a consistent structure throughout, this means that as a general rule if you can navigate and use the functions on one page you can use any page.

If however there is a problem that you cant resolve or there is an issue with the application there is an easy option to contact the administrator. At the bottom of each page is a contact button as shown below.

To report an issue please click [here](#).

This button when clicked will take you to the “Contact Us” page (shown below) that will allow you to write a description of your problem as well as a return email address and send it directly to the administrator.

The screenshot shows a website for a rowing regatta. At the top, a banner features the text "Welcome to Dorney" over a background image of a rowing team in a boat on a river. Below the banner is a navigation menu with links: Home, Registered Clubs/Crews, Programme, Results, Reports, and Contact Us. The "Contact Us" link is highlighted with a blue box. The main content area is titled "Contact Us". It contains a message asking users for trouble with the application or questions about the regatta, followed by a form with fields for Name, Email, and Question, and a "Submit" button. To the right of the form is a photograph of a sunset or sunrise over a river. At the bottom of the page are links for Admin Login, W3C XHTML 1.0, and W3C CSS 2.0, along with a footer navigation bar identical to the main menu.

Full Administrator

Logging In

To enter the Full Administrator mode you must first have a Full Administrator account setup with the system. If you do not have this account please contact the application administrator by following the guidelines in the “Standard User - Getting Help” section of this user manual.

Assuming you have a full administrator account you must first click the “Admin Login” button which can be found in the bottom right of any page in the application. (See image below).



This button when clicked will display the Administrator Login page (as seen below). On this page you must enter your login details.

The screenshot shows the Dorney website's administrator login interface. At the top, a banner image depicts a team of rowers in a long boat on a calm lake. Below the banner is a dark navigation bar with white text links for Home, Registered Clubs/Crews, Programme, Results, Reports, and Contact Us. Underneath the navigation bar is a login form. The login form includes fields for 'Username' and 'Password', both represented by input boxes. Below these fields is a solid orange 'Login' button. To the right of the login form is a decorative image of a swan swimming in a lake near some reeds. At the bottom of the page, there is a footer bar containing the W3C XHTML 1.0 and W3C CSS 2.0 validation logos. The footer also contains a link to report issues and a final set of navigation links identical to the ones in the main header.

Once the login button is clicked the user will be directed to the full administrator home page (please refer to the image on the following page). This page uses a separate colour theme to the standard user mode, this is done intentionally to give the user a clear visual understanding as to when they are in the administration mode. You may also notice new options have become available on the navigation bar. These options are specific to the full administrator and can not be accessed unless in full administration mode.

Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Welcome Matthew

Please select an option from the navigation bar above.

The headers below explain what options are available for each section of the navigation bar.

Home
This Page - (To return to this page at any time just click the home button).

Register Clubs
Allows you to enter new rowing clubs for the south coast championship regatta. This section also allows you to view, edit and delete rowing clubs that have already entered. This process must be completed before a rowing club administrator can be assigned or any crews can be entered.

Register Crews
Allows you to enter new crews for any registered rowing club. This section also allows you to view, edit and delete crews that have already entered.

Programme
Displays which crews are entered for which events and allows for the south coast championship programme to be created or modified.

Results
Allows you to enter results of the races as well view, edit and delete the results.

Administrator Accounts
Displays information and control options for the administrator accounts you have access to.

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Registering a New Rowing Club

To access the register new rowing club section click the “Register Clubs” button from the navigation bar as seen below.



This button will take you to a page that displays the current list of Registered Rowing Clubs. From this page you have access to Edit or Delete any currently registered rowing club (see image below).

ROWING CLUB	ASSOCIATION	OPTIONS
Bmouth	HDARA	[Edit] - [Delete]

You also have the ability to register a new rowing club. To do this click the “Register New Rowing Club” button as shown below.

[Register New Rowing Club]

This will take you to the register new rowing club page which will allow you to add the details of the new rowing club as shown in the image below.

Please complete the fields below and click "Save" when finished. To return to the previous page please click "Back".

Rowing Club Name:	Association:
<input type="text"/>	<input type="button" value="HDARA"/>
<input type="button" value="Save"/>	
Back	

Once the "Save" button is clicked the new rowing club has been successfully registered with the system.

Creating a New Administrator

To access the add new administrator section click the "Administrator Accounts" button from the navigation bar as seen below.



This button will take you to a page that displays the current list of Administrators registered with the system. From this page you have access to Edit or Delete any currently registered administrators (see image below). If you hover over any administrators name you will receive a popup of their full contact details.



Full Admin Mode

Home
Register Clubs
Register Crews
Programme
Results
Administrator Accounts

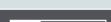
Administrator Accounts

The table below displays information and control options for the administrator accounts you have access to.

[\[Add Administrator\]](#)

NAME	USERNAME	ROWING CLUB	E-MAIL	LEVEL	CONTROL
Matthew Bull	mswbull	Ryde	mswbull@gmail.com	Full	[Edit] [Delete]
Jon Bond	jbond	Poole	jbond@email.com	Club	[Edit] [Delete]
Steve Bull	scbull	Ryde	scbull@email.com	Club	[Edit] [Delete]
Ollie McPhee	omcphee	Bexhill	omcphee@email.com	Club	[Edit] [Delete]
James Bate	jbate	Bideford	jbate@email.com	Club	[Edit] [Delete]
Chris Pettigrew	cptettigrew	BTC	cptettigrew@email.com	Club	[Edit] [Delete]
Matthew Simmons	msimmons	Hastings	msimmons@email.com	Club	[Edit] [Delete]
Sarah Morris	smorris	Eastbourne	smorris@email.com	Club	[Edit] [Delete]
Nick Wells	nwellis	Plymouth	nwellis@email.com	Club	[Edit] [Delete]
James Doughty	jdoughty	Castle Dore	jdoughty@email.com	Club	[Edit] [Delete]
Chris Wilson	cwilson	Bmouth	cwilson@email.com	Club	[Edit] [Delete]

To report an issue please click [here](#).

E-Mail:
 mswbull@gmail.com

[Home](#)
[Register Clubs](#)
[Register Crews](#)
[Programme](#)
[Results](#)
[Administrator Accounts](#)

To add a new administrator click the “Add Administrator” button. This will direct you to a page that will allow you to enter the new administrators details. Pay special attention to the administrators rowing club and admin level as these options directly affect what the have access to change in the system. The image below shows the add administrator page.

The screenshot shows a web application interface titled "Full Admin Mode". At the top, there is a navigation bar with links: Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts. Below the navigation bar, the title "Add Administrator" is displayed. A message instructs the user to "Please complete the fields below and click save when finished. To return to the previous page please click back." The form contains several input fields for administrator details: Username, Address Line One, Registered Club (with a dropdown menu); Password, Address Line Two; Forename, City; Surname, County; E-Mail, Postcode; and Phone. There are also "Save" and "Back" buttons. At the bottom, there are W3C validation links (XHTML 1.0, CSS 2.0) and an "Admin Logout" link. The footer includes a navigation bar with Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts.

Once the “Save” button is clicked the administrator will be added to the system and will instantly be able to log in.

Registering Crews on behalf of a Rowing Club

To register new crews on behalf of a rowing club first click the “Register Crews” button from the navigation bar as seen below.



Once clicked a page displaying the registered rowing clubs will be displayed. Select the specific rowing club you would like to register a crew for from the list by clicking the “View Registered Crews” button as seen below.

ROWING CLUB	ASSOCIATION	ADMINISTRATOR	CONTROL OPTIONS
Poole	HDARA	Jon Bond	[View Registered Crews]

This button will display a page with a list of already registered crews the specific rowing club has, to register a new crew for the rowing club click the “Register New Crew” button as seen below. Please note that you also have access to edit or delete crews on behalf of the rowing club by clicking the “Edit” and “Delete” buttons.

EVENT/CREW	EVENT TYPE	BOW	THREE	TWO	STROKE	COX	CONTROL OPTIONS
MS4x A	Championship	Adam	Adam	Adam	Adam	Adam	[Edit] [Delete]
MJS4x A	Championship	Bill	Bill	Bill	Bill	Bill	[Edit] [Delete]
MJ4x A	Championship	Chris	Chris	Chris	Chris	Chris	[Edit] [Delete]
MN4x A	Championship	Jim	Jim	Jim	Jim	Jim	[Edit] [Delete]
MS4x A	Invitation	Matthew Bull	Chris Walker	Lee Bennett	Mike Palin	Ash Maitland	[Edit] [Delete]

[\[View Substitute Competitors\]](#)

[Back](#)

To report an issue please click [here](#).

[Admin Logout](#)

[| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |](#)

The “Register New Crew” button will take you to a page that lets you enter the details of the new crew including all primary and secondary competitors within the specific crew (see the image on the following page). Once the crew details have been entered click the “Save” button to finish the registering the crew.

Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Register Crew

Please complete the fields below and click save when finished. To return to the previous page please click back.

Crew Information	Primary Competitors	Substitute Competitors
Event	Bow	Bow
Crew Designation	Two	Two
	Three	Three
	Stroke	Stroke
	Cox	

Save

Back

W3C XHTML 1.0 **W3C CSS 2.0** **Admin Logout**

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Programme Management

To enter the programme management section of the system click the “Programme” button from the navigation bar as seen below.



This button will take you to the programme management page as shown on the following page. This page allows you to complete three options these are: -

Create Programme

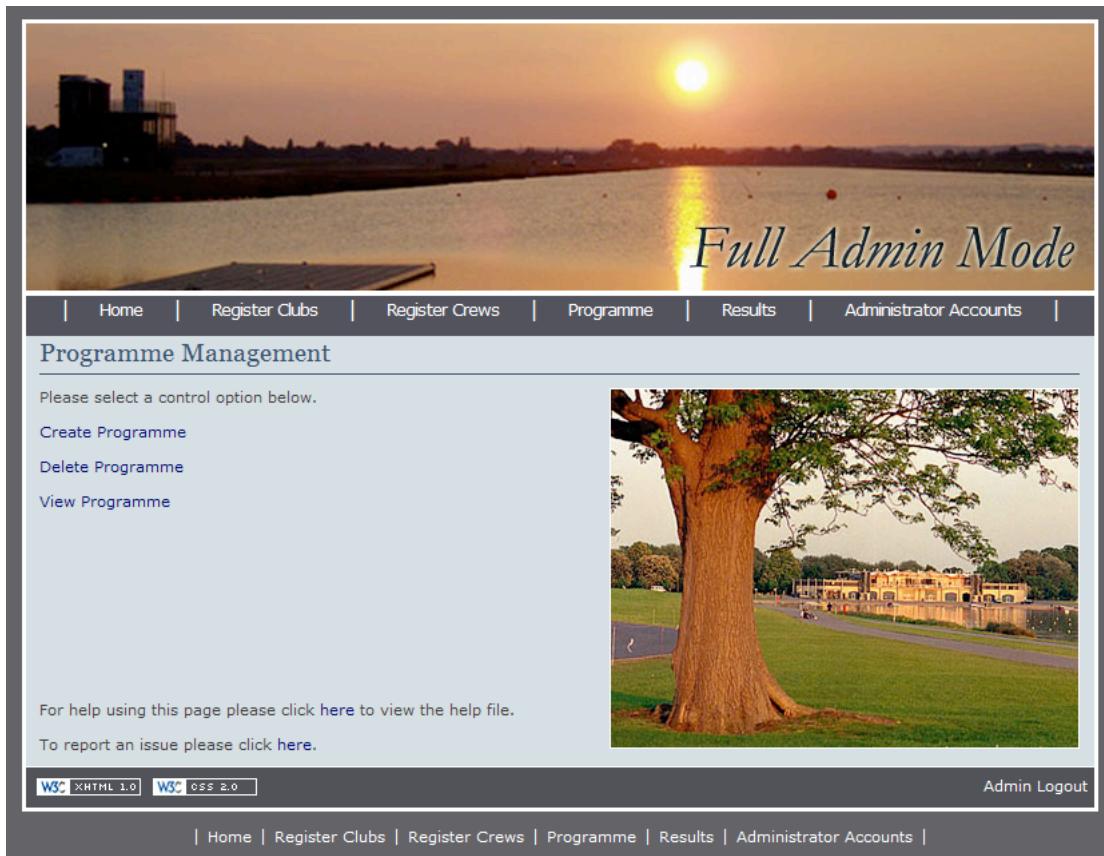
This button will automatically generate a programme based on the rowing clubs and crews registered with the system. It will automatically put each crew into its correct event and build the structure for the results to be entered. (please note that if the “Create Programme” button is clicked whilst programme information has already been created it will overwrite this information).

Delete Programme

This button deletes any programme that has currently been created.

View Programme

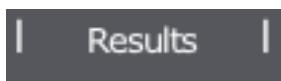
This button allows you to view the created programme displaying the same information the standard user would see if they were to view the programme.



The screenshot shows a web application interface. At the top is a banner image of a sunset over a body of water with buildings in the background. Below the banner is a dark navigation bar with white text and icons. The navigation bar includes links for Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts. The main content area has a light blue header titled "Programme Management". Below the header, there is a message: "Please select a control option below." followed by three buttons: "Create Programme", "Delete Programme", and "View Programme". To the right of these buttons is a large image of a tree trunk next to a river with buildings in the background. At the bottom of the page is a footer bar with links for Home, Register Clubs, Register Crews, Programme, Results, and Administrator Accounts, along with W3C XHTML 1.0 and W3C CSS 2.0 validation icons and an Admin Logout link.

Adding or Updating Results

To add or update results click the “Results” button from the navigation bar as seen below.



This button will take you to the results page which displays a list of all events with crews entered in them as seen in the image on the following page. To view the specifics of the event click the “View/Add/Update Event Results” button for the specific event.



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Results

Please click "View/Add/Update Event Results" for the specific event to view, add or update results and times.
(Please note only events with crews entered are shown here).

Event Name	Event Type	Control Options
MS4x	Championship	[View/Add/Update Event Results]
MJS4x	Championship	[View/Add/Update Event Results]
MJ4x	Championship	[View/Add/Update Event Results]
MN4x	Championship	[View/Add/Update Event Results]
MS4x	Invitation	[View/Add/Update Event Results]
MJS4x	Invitation	[View/Add/Update Event Results]
WS4x	Invitation	[View/Add/Update Event Results]

To report an issue please click [here](#).

[Admin Logout](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

From the "View/Add/Update Event Results" button the user has the ability to select a specific crew by clicking "Add/Edit Result" that they would like to add or update a result for. Please see the image below.



Full Admin Mode

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

Event Results

To add or update the result and time for a crew in this event please click "Add/Edit Result" for the specific crew.

Result/Position	Rowing Club/Crew	Time	Control Options
1st	Ryde A	09:18:36	[Add/Edit Result]
2nd	Bexhill A	09:18:38	[Add/Edit Result]
3rd	Bmouth A	09:18:42	[Add/Edit Result]
4th	Castle Dore A	09:19:12	[Add/Edit Result]
5th	Plymouth A	09:19:32	[Add/Edit Result]
6th	BTC A	09:19:39	[Add/Edit Result]
7th	BTC B	09:19:42	[Add/Edit Result]
8th	Eastbourne A	09:19:55	[Add/Edit Result]

[Back](#)

To report an issue please click [here](#).

[Admin Logout](#)

| Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |

The add or edit result page allows the user to input the result information which will be instantly updated throughout the system when the “Save” button is clicked. See the image below.

The screenshot shows a web application interface for managing rowing results. At the top, there is a banner image of a sunset over a body of water with buildings in the background. Below the banner, the text "Full Admin Mode" is displayed. The main content area has a header "Result Update". Below the header, a message says "Please update the crews result and time below and click Save when finished." A table is used to input the results:

ROWING CLUB/CREW	RESULT	TIME
Ryde A	1st <input type="button" value="▼"/>	09:18:36

A "Save" button is located below the table. A note at the bottom left says "To report an issue please click [here](#)". At the bottom right, there are links for "Admin Logout", "W3C XHTML 1.0", and "W3C CSS 2.0". The footer contains a navigation bar with links: Home | Register Clubs | Register Crews | Programme | Results | Administrator Accounts |.

Logging Out

When you are finished making changes in the full administrator mode you can log out by simply clicking the “Admin Logout” button located in the bottom right corner of every page (see image below). This button will direct you back to the standard user home page. Please note this process will be made clear by the change of colour theme back original standard users theme.

Admin Logout

Rowing Club Administrator

Logging In

To enter the Full Administrator mode you must first have a Full Administrator account setup with the system. If you do not have this account please contact the application administrator by following the guidelines in the “Standard User - Getting Help” section of this user manual.

Assuming you have a full administrator account you must first click the “Admin Login” button which can be found in the bottom right of any page in the application. (See image below).



This button when clicked will display the Administrator Login page (as seen below). On this page you must enter your login details.

Once the login button is clicked the user will be directed to the club administrator home page (please refer to the image on the following page). This page uses a separate colour theme to the standard user mode, this is done intentionally to give the user a clear visual understanding as to when they are in the administration mode. You may also notice new options have become available on the navigation bar. These options are specific to the club administrator and can not be accessed unless in club administration mode.

Club Admin Mode

| Home | Register Crews | Administrator Account |

Welcome Jon

Please select an option from the navigation bar above.

The headers below explain what options are available for each section of the navigation bar.

Home
This Page - (To return to this page at any time just click the home button).

Register Crews
Allows you to enter new crews for the south coast championship regatta. This section also allows you to view, edit and delete crews that your rowing club have already entered.

Administrator Account
Displays information and control options for your rowing club administrator account.

W3C XHTML 1.0 W3C CSS 2.0 Admin Logout

| Home | Register Crews | Administrator Account |

Administering Your Account

To access the add new administrator section click the “Administrator Account” button from the navigation bar as seen below.



This button will take you to the options to edit your account details as shown in the image on the following page. As a restricted user you can not edit the rowing club or administrator level that was originally setup.



Club Admin Mode

Home	Register Crews	Administrator Account
----------------------	--------------------------------	---------------------------------------

Edit Administrator

Please update the fields below and click save when finished. To return to the previous page please click back.

Username: jbond	Address Line One: 27 Easter Road
Password: ****	Address Line Two: Moordown
Forename: Jon	City: Bournemouth
Surname: Bond	County: Dorset
E-Mail: jbond@email.com	Postcode: BH9 1SW
	Phone: 077476832

Save

[Back](#)

[Admin Logout](#)

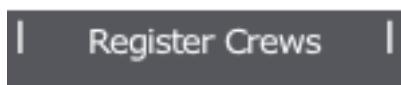
[W3C XHTML 1.0](#) [W3C CSS 2.0](#)

Home	Register Crews	Administrator Account
----------------------	--------------------------------	---------------------------------------

Once account changes have been made click the “Save” button to have these changes take effect.

Registering Crews for the Regatta

To register new crews on behalf of a rowing club first click the “Register Crews” button from the navigation bar as seen below.



This button will take you to a list of crews currently registered for your specific rowing club (see the image on the following page). This page allows the user to register new crews by clicking the “Register New Crew” button. Please note you also have access to edit and delete already registered crews by clicking the “Edit” or “Delete” buttons.



Club Admin Mode

| Home | Register Crews | Administrator Account |

Registered Crews

The table below displays information for the registered crews, the competitors shown are the **primary** competitors for each crew. To view the substitute competitors please click the link below the table.

[Register New Crew]

EVENT/CREW	EVENT TYPE	BOW	THREE	TWO	STROKE	COX	CONTROL OPTIONS
MS4x A	Championship	Bill	Bill	Bill	Bill	Bill	[Edit] [Delete]
MJS4x A	Championship	John	John	John	John	John	[Edit] [Delete]
MJ4x A	Championship	Frank	Frank	Frank	Frank	Frank	[Edit] [Delete]
MN4x A	Championship	James	James	James	James	James	[Edit] [Delete]
MS4x A	Invitation	Leo	Leo	Leo	Leo	Leo	[Edit] [Delete]
MJS4x A	Invitation	Jon	Jon	Jon	Jon	Jon	[Edit] [Delete]
WS4x A	Invitation	Matt	Matt	Matt	Matt	Matt	[Edit] [Delete]

[View Substitute Competitors]

To report an issue please click [here](#).

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Crews | Administrator Account |

The “Register New Crew” button will take you to a page that lets you enter the details of the new crew including all primary and secondary competitors within the specific crew (see the image on the following page). Once the crew details have been entered click the “Save” button to finish the registering the crew.



Club Admin Mode

| Home | Register Crews | Administrator Account |

Register Crew

Please complete the fields below and click save when finished. To return to the previous page please click back.

Crew Information	Primary Competitors	Substitute Competitors
Event <input type="text"/>	Bow <input type="text"/>	Bow <input type="text"/>
Crew Designation <input type="text"/>	Two <input type="text"/>	Two <input type="text"/>
	Three <input type="text"/>	Three <input type="text"/>
	Stroke <input type="text"/>	Stroke <input type="text"/>
	Cox <input type="text"/>	

[W3C XHTML 1.0](#) [W3C CSS 2.0](#) Admin Logout

| Home | Register Crews | Administrator Account |

Logging Out

When you are finished making changes in the club administrator mode you can log out by simply clicking the “Admin Logout” button located in the bottom right corner of every page (see image below). This button will direct you back to the standard user home page. Please note this process will be made clear by the change of colour theme back original standard users theme.

Appendix Z

12.26 Appendix Z - Customer Feedback



Hants & Dorset Amateur Rowing Association.

President: J. Bailey.

Chairman: M. Green.

Hon. Treasurer: K. Warland.

Web Site: hdara.co.uk

Dear Matthew,

I would like to thank you for the time and effort you have put into this project. The H&D committee have been very impressed with your level of dedication and knowledge in explaining to us the options available. We are very pleased with how the system has progressed and feel it has given us a real glimpse into the future of what is capable. You will pleased to hear that at our general meeting last week we demonstrated the system to the affiliated rowing clubs and the feedback was very positive, mainly based on the fact that the regatta registration would no longer be the tedious task it once was.

We hope you will be happy to continue the development of the system, maybe implementing some of the additional features we have discussed as we see real potential in this system and hope it could become the basis of all regattas held by the H&D.

Again many thanks on a great job,

Mike.

Mike Green