

Web Information System  
& E-Community  
For Poulton Town FC  
[www.poultontown.co.uk](http://www.poultontown.co.uk)

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Information Systems with Management  
2005/06

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## **Summary**

This document provides a detailed report of the project undertaken to solve problems experienced by Poulton Town Football Club in facilitating information/knowledge sharing and member interaction.

The primary aim was to implement a web-based information system which would assist collection, distribution and usage of information throughout the club. Information was to include match reports, member details and ‘football knowledge’. In an extension to the original requirements, an e-community (containing a member directory and chat forum), public website and online services, were also included as part of the overall solution.

Throughout the project, the importance of sustained end-user involvement was considered vital to success. The use of the WISDM methodology, supplemented by prototyping, allowed requirements to be continually re-defined and integrated into the system. An effective change management programme was also designed to ensure continued involvement and support from key stakeholders, who would ultimately decide upon project success/failure.

In order to create a system which would encourage and facilitate use by all members, ‘Nielsen’s 10 principles’ were used as a basis for HCI design. The system was also implemented in a manner which permits future development/extension by the club. This was achieved through appropriate technology choices and a consistent, ‘commented’ coding style.

The people-based nature of the problem meant extensive organisational and information analysis were undertaken prior to design/implementation. A phased approach to development permitted simultaneous testing and development, increasing efficiency. While unit testing was completed by the developer, extensive end-user acceptance testing was also utilised to evaluate prototypes and the final system. A dedicated PTFC project team, made up of computer-literate club members, took responsibility for overseeing end-user testing and provided effective interface between the developer and PTFC.

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## **Table Of Contents**

### Chapter 1 – Introduction

1.1 Aim.....	1
1.2 Company Background.....	2
1.3 Problem Definition.....	2
1.4 The Solution.....	2
1.5 Objectives.....	2
1.6 Minimum Requirements.....	2
1.7 Possible Project Enhancements.....	3
1.8 Deliverables.....	3
1.9 Relevance To Degree.....	3
1.10 Project Schedule.....	3

### Chapter 2 – Background Research

2.1 Research Planning.....	4
2.2 Reducing The Likelihood Of Project Failure.....	4
2.3 Methods For Gathering User Requirements.....	5
2.4 Project Methodology.....	6
2.4.1 Choosing The Methodology.....	6
2.4.2 Methodologies Considered.....	6
2.4.3 The Adopted Methodology –WISDM.....	9
2.4.4 Justifying The Chosen Methodology.....	9
2.5 The Proposed System.....	10
2.5.1 Selecting An Appropriate Medium.....	10
2.5.2 Justifying The Approach Of The Proposed Solution.....	11
2.5.3 Existing Packages .....	12
2.5.4 Usability And The Human Computer Interface.....	13
2.6 E-Communities.....	13
2.7 Change Management .....	14

### Chapter 3 – Analysis

3.1 Organisational Analysis.....	15
3.1.1 The Current System.....	15
3.1.2 Previous Systems.....	15
3.1.3 Strategy Analysis.....	15

3.4.1 Organisational Modelling: Rich Picture & CATWOE Analysis.....	17
3.1.5 Knowledge Management.....	17
3.2 Information Analysis.....	17
3.2.1 Gathering User Requirements.....	17
3.2.2 Functional Requirements.....	18
3.2.3 UML modelling.....	20
3.2.4 Non-Functional Requirements.....	20
3.2.5 Feasibility Study.....	21
3.2.6 Risk Analysis.....	23

#### Chapter 4 – System Development Phase 1: Website & Information System

4.1 Approach To Development.....	25
4.2 Technology: .....	25
4.2.1 Mark-up Languages/Standards.....	26
4.2.2 Database Technologies.....	26
4.2.3 Server-Side Technologies.....	26
4.2.4 System Architecture.....	27
4.3 System Design: .....	28
4.3.1 System Structure.....	28
4.3.2 User Interface & Visual Appearance (Webpage Design) .....	28
4.3.3 Database Design.....	30
4.3.4 Integrity Constraints.....	31
4.3.5 Security.....	31
4.3.6 Web hosting.....	31
4.3.7 Tools To Assist Development.....	32
4.4 Implementation.....	32

#### Chapter 5 – Further Development

5.1 Phase 2: Chat Forum.....	36
5.1.1 Pre-coded Forums.....	36
5.1.2 Design.....	36
5.1.2 Implementation.....	36
5.2 Phase 3: Member Directory & Communication.....	38
5.2.1 Design.....	38
5.2.2 Implementation.....	39
5.3 Phase 4: Online Services.....	40

5.3.1 Design.....	40
5.3.1 Implementation.....	41

## Chapter 6 – Testing & Into Production

6.1. Unit Developer Testing.....	43
6.2. End-User Acceptance Testing.....	43
6.3. Into Production.....	43

## Chapter 7 -Evaluation

7.1. Evaluation Criteria.....	44
7.2. Aims and Objectives Achievement .....	44
7.3. Meeting User Requirements & Enhancements/Quality Improvements.....	45
7.4. Evaluation Of Approach & Utilised Technology.....	46
7.5. Comparison against other solutions.....	47
7.6. User Feedback/Evaluation.....	48
7.7. System Acceptability.....	48
7.8. Change Management.....	50
7.9. Effectiveness Of The Methodology.....	50
7.10. Criticisms & Possible Improvements/Extensions .....	51
7.11. Summary & Conclusion.....	53
 <u>References</u> .....	54

## Appendices

A – Personal Reflection.....	57
B – Introduction.....	59
C – Background Research.....	86
D – Organisational Analysis.....	96
E – Information Analysis.....	110
F – Phase 1: Design.....	121
G – Phase 1: Implementation.....	136
H – Phase 2.....	170
I – Phase 3.....	176
J – Phase 4.....	184
K – Testing.....	189
L – Evaluation.....	215

## **1. Introduction**

### **1.1 Aim**

The aim of this project is to implement a web-based information system for Poulton Town Football Club (PTFC) to improve their current manual, 'paper-based' operations. Focus will primarily be upon assisting collection, distribution and usage of information throughout the club. A variety of information will be handled including match reports, member details and football 'knowledge'. In addition, e-community facilities will aim to improve member interaction and information sharing.

### **1.2 Company Background**



Since being founded in 1947, Poulton Town 'amateur' football club has grown considerably in both size and stature. It now operates 15 teams, with assistance from 14 qualified and 10 volunteer coaches. Facilities consist of two locations, both with dedicated changing-rooms and numerous pitches. In 2003 PTFC became a 'Charter Standard Development Club' meaning it is nationally recognised as adopting 'best practice' in "coaching, first aid, child protection, administration, and sports development". A dedicated committee take overall responsibility for activities, finance and club development, but the majority of staff are volunteers and the club is a non-profit-making organisation. Funding is obtained via membership fees, fund raising events/initiatives and Council/FA contributions. Further background on PTFC is provided in Appendix B.1.

### **1.3 Problem Definition**

As a 'Charter Standard Development Club', PTFC is committed to offering excellent levels of support for football activities. Recent growth in size/stature means the pressures associated with maintaining and improving on this high standard have increased dramatically. It is therefore felt that a new computerised system is required to assist the storage, utilisation and distribution of information throughout the club. Currently, a manual, 'paper-based' system is implemented for controlling formal club/league administration (player registration, logging results, facility-booking etc). Similarly, 'emergent, non-standardised' processes devised by individual staff members exist to handle storage/distribution of team/player related information (player/team statistics/development, training plans, match-day arrangements etc). The cumulative effect is that information collection, storage and usage is inconsistent and often inaccurate.

Additional problems arise from both the distributed nature of team members (who are only able to meet once or twice each week) and complete lack of physical contact between the different teams (who operate in isolation of each other). This means there is currently very little opportunity for member interaction, which has a negative impact on both 'club identity/spirit' and the effective sharing of 'football knowledge'.

## **1.4 The Solution**

PTFC would like to introduce a ‘club-wide’ information system to drive development of a more professional, integrated club structure. It is hoped that the standardisation will increase both accuracy and efficiency of information handling. A database will be implemented to ‘store’ a variety of information such as match reports and member details. Functionality will also be provided which allows ‘utilisation’ of the information eg. finding, sorting, summarising of information/statistics. The distributed nature of members and lack of suitable ‘company premises’ means accessibility to the system will be provided via the Internet (so club members can access it from home).

The system is also required to contain a ‘football knowledge’ resource centre, encouraging better sharing of football-related knowledge between staff/players of all teams. It is envisaged that such a resource will generate a continuous, incremental ‘cycle of development’, with members benefiting from and driving each others’ development. Converting ‘tacit’ knowledge into a durable online knowledge resource will also increase retention in case of staff/player turnover.

In order to address the challenge of generating a greater sense of ‘club identity/spirit’, the online information system interface will be expanded into a web-site, with an additional members-only ‘e-community’. The web-site will allow club information to be distributed publicly, increasing the club’s identity and presence in the local/global community. Adding a private e-community will allow club members to identify each other, socialise and share football-related information/knowledge using features such as chat-forums, member directories and notice boards.

## **1.5 Objectives**

To solve this problem, the following objectives must be achieved adequately:

- Identify and understand PTFC’s requirements, including features/functionality, usability & appearance
- Conduct appropriate background research so as to identify and understand relevant issues
- Apply an appropriate methodology throughout the project
- Design a system which satisfies user requirements and utilises appropriate technology/architecture
- Implement and adequately test the designed system
- Evaluate the system to identify whether requirements have been met

## **1.6 Minimum Requirements**

The following must be achieved in order to deliver an acceptable solution to the problem:

- A ‘static content’ club website for displaying club information to the public
- A secured members area (username & password) for displaying private club information
- A remotely accessible Information System, allowing storage/utilisation of club information/knowledge
- A system which has undergone functionality testing and is live on the World Wide Web

## **1.7 Possible Project Enhancements**

- A system which adheres to Nielsen's 'best practices' regarding usability
- Integration of an 'E-Community' environment into the members area
- Provision of online services such as route planning, facilities booking
- Implementation of a 'role-based' security model to protect the member's area
- A system which can be maintained & developed by someone with reasonable technical ability
- WAP accessibility to key system functionality
- 'End-user acceptance testing' to assist both in implementation and evaluation
- BPR and change management assistance to help effectively integrate the system into use
- Creation of user manuals for each user type (varying appropriately in content and style)

## **1.8 Deliverables**

- A working system, live on the World Wide Web
- A report containing; problem analysis, research, design, implementation overview & evaluation

## **1.9 Relevance To Degree**

This project draws upon skills/abilities developed throughout the entire degree programme and during industrial placement (YO2). Modules of particular relevance include; information systems strategy (IS31), development/design (IN11, IS21, IS31, IS33) & security (IS34), databases (DB11, DB21), Internet systems technologies (SY23), programming (SO13) and project management (SE22).

## **1.10 Project Schedule**

Project scheduling/planning was achieved using Gantt Charts (a critical evaluation against alternative tools is provided in appendix B.2). This tool is particularly useful because its clear visual representation of both task duration and ordering, facilitates effective high-level planning. Graphically charting 'actual' versus 'planned' progress also ensures effective progress monitoring. Delays can be quickly identified, along with their knock-on effects, meaning corrective action can be taken. [1] The limited time available to complete a project of this complexity and size, coupled with the inflexibility of major deliverable deadlines, makes project scheduling of paramount importance.

Appendix B.3 contains the Gantt Chart representing the initial planned project schedule. Workload was intentionally skewed to cope with a 70:50 credit imbalance in final year modules. Formal stages can be identified, with corresponding milestones and deliverables. Progress review points were strategically placed so as to ensure effective monitoring and consolidation of progress throughout. Numerous revisions to the initial plan, prompted by changes in approach, user requirements or not keeping to schedule, are documented within the 'progress review reports' contained in appendix B.4. Corresponding revised Gantt Charts and explanation for the revisions are included within each report.

## **2. Background Research**

### **2.1 Research Planning**

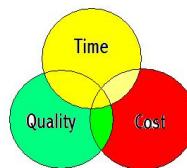
So as to ensure effective background research in terms of both ‘topic coverage’ and ‘source-quality’, a research plan was formulated at the project outset (provided in appendix C.1). Appropriate sources were identified and then consulted so as to evaluate which topics should be covered. The topics were then formulated into check-list which ensured thorough investigation of all relevant issues. As additional topics were subsequently revealed, they too were investigated. Wherever possible the quality and validity of the source was considered before referencing, with poor quality/unreliable sources being discarded. Literature was primarily referenced from the University Library, lecturer references, computing journals and recognised industry experts’ literature/citations.

### **2.2 Reducing The Likelihood Of Project Failure**

In order to gain a better understanding of final year project demands and benefit from past experience, a review of previous Leeds University Computing projects was undertaken. Factors identified by the authors as important to achieving success include; focus upon functionality not features, plan extensively before beginning programming, schedule workload realistically and adopt an appropriate methodology throughout. In their student advice publication, Cornford and Smithson (1996) [2] also emphasise the importance of selecting research subjects which specifically add value to the project, rather than being vaguely appropriate or traditional. Hughes and Cotterell (2002) [3] suggest utilising familiar tools may be advantageous, while learning new ones will require familiarisation/learning time within the schedule. Good planning/time management (with continual review/adjustment) and maintaining client commitment (via effective communication/involvement) appear to be fundamental. Sauer (1993) [4] highlights numerous examples of project failures. Developers often appear to not explore/understand background issues effectively so extensive time has been allocated to research and analysis. Tendency to negate user-involvement will be combatted through heavy use of prototyping and user-review/feedback. Many developers also do not allocate enough time to programming, causing them to omit essential functionality. A phased approach will ensure development matches available resources, while overlapping implementation and testing should increase efficiency through ‘task paralleling’. A flexibility period in the schedule should help cope with unforeseen problems.

#### **Objectives Balancing**

Project objectives consist of a balance between time, quality and cost. Finite resources mean increasing one will have a detrimental effect on the other(s). In this project, time is the most important objective since it is vital the project meets its deadline. Quality is of secondary importance because a high-quality product is needed to provide an effective solution for the user and obtain a high grade. Cost can be seen as important because the project budget is extremely small. PTFC have indicated a willingness to provide



justifiable funding, however their limited club budget means costs need to be minimised. Cost will therefore be balanced against quality to produce a standard of solution justified by its cost.

### **2.3 Methods For Gathering User Requirements**

Gathering primary information is vital to accurately understanding the problem and organisational context. Skidmore (1994) [5] suggests the vast amount of documentary evidence often amassed, can provide an important insight into current organisational arrangements. It is however important not to attempt to review an excessive amount, especially that not relevant to the problem. Asking staff to provide documentation used in day-to-day activities can help, however ensuring thorough coverage is also vital. The nature of PTFC activities means the variety of documentation is limited. However most is likely to be extremely useful since the current system is totally paper-based and the new solution will completely reorganise the flow of information throughout the club. Findings of the PTFC documentation review are summarised in appendix C.2.

Preece et al (2002) [6] identify ‘interviewing’ as a formal means of obtaining information regarding “the operations of present systems and requirements of replacements”. Research suggests however that interview effectiveness can vary greatly. Not only are they dependent upon effective interviewer training and interview planning, but inherent problems with the technique also exist eg. questions or interviewer-imposed bias in answers. [6] Further more, over-structuring can limit the scope of discovery, while under-structuring can lack the flexibility needed to explore the problem domain effectively. “Interviewing can however be particularly important in the earlier stages of a project” [5]. Consequently a semi-structured phone interview will be used to gather initial background information, while JAD (Joint Application Development) workshops will be held in order to formulate more substantial system requirements.

JAD sessions are often utilised as part of a RAD approach to ‘hammer out’ requirements quickly. [7] The technique effectively involves congregating a representative group of stakeholders together, with the developer providing topics or headings to initiate discussions which identify problems/formulate plans for a new system. JAD sessions can dramatically increase quality and speed of communication /understanding, achieving what traditional methods may take several weeks or months to do.

The final method of information gathering recommended by Skidmore is ‘observation’. The researcher immerses themselves in the organisation so as to view it from a neutral perspective, something which cannot be provided by club members. A particular advantage is that many issues are revealed which staff may not have been considered relevant or may have taken for granted, causing them not to be discussed/documentated by other methods. As with interviewing however researcher must act to reduce the impact of their involvement. Behaviour may be altered due to the presence of the observer, leading to inaccurate information. Alternatively the researcher may themselves struggle to remain objective. A ‘task description’ (written prose) can be used to document observation findings. Cumulatively, these techniques should generate an accurate profile of the organisation.

## **2.4 Project Methodology**

### **2.4.1 Choosing The Project Methodology**

To ensure an appropriate project methodology is chosen Avison and Fitzgerald (1995) [1] present a framework (summarised in appendix C.3) to assist developers in comparing and selecting from the available options. When evaluating the identified alternatives and choosing the adopted methodology, this framework of issues was used to structure the decision making process and ensure consideration of each methodology's advantages and disadvantages. This helped validate and justify the choice. Methodologies not covered below, but considered as part of the mid-term report are in appendix C.4.

### **2.4.2 Methodologies Considered**

Methodologies can generally be categorised by their level of structure. [8] Highly structured methods usually consist of numerous 'steps' which when applied in order, combine to produce the desired product. Documentation and formality/rigidity of stages/processes is intentionally high so as to increase the likelihood of producing an accurate, error-free system reflecting the user's pre-defined requirements. Considerable emphasis on documentation aids maintenance/development after deployment. High structuring is often used in larger projects where it facilitates effective work distribution in larger teams and assists project management/progress tracking. In 'safety'/government based systems, the focus on documentation also enhances legal security in case of future problems.

#### **Structured Systems Analysis and Development Method (SSADM)**

The classic model of system development SSADM, is based upon implementing a 'one-time process' from start to finish (with little re-working of already completed steps). A major strength is that progress is easy to monitor and an apparently logical approach is taken to the production of a solution. However, such an idealistic approach of how a project 'should' run often lacks necessary flexibility, especially when requirements change or are incorrectly profiled (which is often the case). Consequently this method is most suitable for projects with fixed requirements or those based on an existing system. [9] Developments such as the 'V-Process model' and Boehm's 'Spiral Model' attempt to increase flexibility through iterations/validation activities.

Increasingly over recent years there has been a shift in focus towards less structured methodologies. Business focused IT/IS customers appear to be demanding methods which allow quicker delivery of solutions at lower cost, accepting compromises in documentation depth. Highly structured methodologies like the Waterfall Model, are being perceived as unnecessarily bureaucratic, slow and not focused enough upon the requirements of the individual context. Such pressures have lead to the development Rapid Application Development (RAD) methodologies. These often encourage the quick production of prototypes which can be evaluated by users and either discarded or evolved, to finely tune requirements and move towards an accurate final system though repeated iteration.

## **Prototyping**

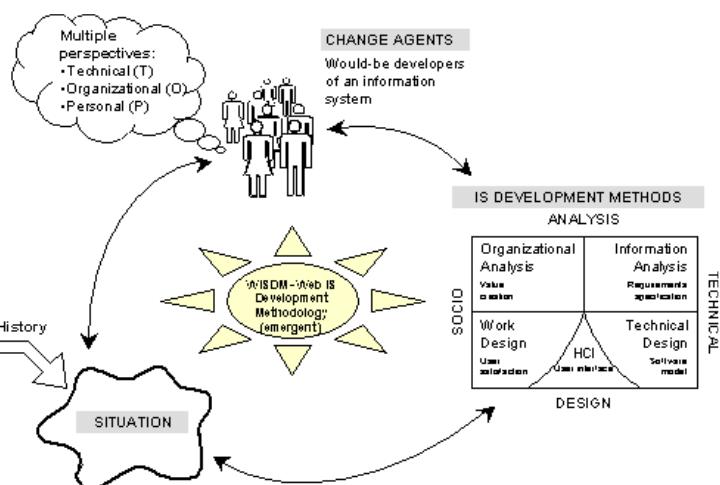
Arguments to support the use of prototyping are listed by Hughes and Cotterell (2002) [3]. Key advantages are that prototyping usage & evaluation helps users to better define and express (communicate) their requirements. When using development tools, prototypes may also help to suggest features which can be easily implemented, as opposed to intensive paper-based designing which may demand features that are difficult or ‘expensive’ (in time or direct cost) to implement. Prototyping can therefore be used to take into account ‘real-world pressures’, for example, justifying cost effectiveness of features, rather than operating in the ‘ideological’ environment of other methods. Further to this point, prototyping copes with and indeed actively encourages development of user requirements/feature inclusions *during* the project, while also ensuring high user-participation. This helps avoid one of the major causes of project failure, changing user requirements. Prototyping must however be closely monitored so as to ensure it does not over-run the schedule or encourage sloppy ‘hacked’ implementations. Lantz (1986) [10] highlights the usefulness of prototyping during design, implementation and testing, explaining “as those working with the prototype evaluate, modify and add to it, they will be completing the design of the system”. Adopting this ‘evolutionary prototype’ approach allows an extended design phase which overlaps with implementation. This enables quick and efficient progression towards a complete system, accurate to the latest user requirements.

## **Soft Systems Methodologies**

The above ‘hard methods’ focus primarily upon producing a functional computerised system, without really taking into account the wider social/organisational context and the impact of the new system. ‘Soft methodologies’ [11] on the other hand, focus upon an evaluation of the organisation’s key activities and strategies, without the pre-conceived assumption that an IT solution will result. If it does, then methods impose consideration of factors such as usability and acceptability, not just functionality. Unfortunately however ‘soft methods’ alone often rarely cover the entire project life-cycle, instead focusing on requirements and information gathering/analysis without explicitly supporting developers through technical implementation. SSM, developed by Peter Checkland, is “primarily concerned with tackling the ill-structured problems of the real-world, suggesting solutions that may or may not include computers.” [5] The methodology essentially involves extensive modelling and comparison of the current and conceptually ideal structures, procedures & attitudes. It culminates in the identification and proposition of feasible, desirable changes which can be implemented. Two particularly useful SSM tools are ‘Rich Pictures’ and ‘CATWOE’ analysis. Rich Pictures provide the analyst with a good overall view/understanding of the organisation context and can help identify specific problem area(s). This is likely to prove an important first step structuring and representing the situation effectively, increasing accuracy and the likelihood of success. ‘CATWOE’ analysis identifies and profiles influential/important stakeholders. The information it provides can assist ‘change management’ by evaluating potential sources of support and resistance.

## **WISDM**

WISDM (Web Information Systems Development Methodology), described in Avison et al (2002) [13], is effectively an extension of the Multiview framework, focussing it specifically towards web-based systems. For example HCI design concentrates on aspects such as page layout and navigation. Multiview was originally developed with the intention of moulding together a range of more traditional/established social (soft) and technical (hard) development methodologies (known best practices) into an integrated approach. WISDM is consequently intended to be a versatile yet complete approach, covering from strategic business analysis right through to implementation. An additional advantage is that it takes into account the importance of situation, people-issues, and solution methods. [12] Rather than being a specific step-by-step, ‘prescriptive’ methodology, it adopts a ‘tool-kit’ approach, offering a range of techniques which the developer can ‘mix-and-match’ to create a hybrid methodology most appropriate in breadth and depth for the specific situation. Avison et al (2002) explains. “the framework requires the developer to construct a particular methodology from the ingredients, that is suitable to the situation in hand”. Phases of development and recommended tools are highlighted below:



**-Organisational analysis – “value creation”:** focuses on strategy, ‘people/relationship’ considerations and understanding the organisational background into which the system operate

*Recommended Techniques: SSM & strategy analysis*

**-Work Design - “ user satisfaction”:** includes the traditional socio-technical considerations of job satisfaction and genuine user participation during development (outlined by ETHICS methodology)

*Recommended Techniques: UML (Universal Modelling Language)*

**-Information Analysis – “requirements specification”:** formalised specification of the information and process requirements ie. traditional methodology ‘system requirements’

*Recommended Techniques: ETHICS, Participative Design*

**-Technical Design – “software model”:** formalised model of the system as it is to be implemented, including data structures and program design. Used to support implementation.

*Recommended Techniques: UML*

**-HCI – “user interface”:** merges work and technical design, drawing on web-site design principles

*Recommended Techniques: page layout designs, navigation/site structures*

### **2.4.3 The Adopted Methodology - WISDM**

The WISDM methodology will be adopted largely as described above. Initial background research will be gathered via document analysis, a short interview and observation. The findings will then be summarised into a ‘task description’. Organisation analysis will involve SSM techniques (rich picture and CATWOE) and strategy analysis, while information analysis and design will use UML notation and other web-focused techniques. JAD sessions will be conducted to formally define system requirements, which will be formulated into a phased development plan (based upon priority) that ensures initial focus upon attaining minimum requirements. Evolutionary prototyping will be used within each phase to validate accurate implementation (reducing the pressure on testing) and develop a system which reflects the most up-to-date user requirements (actively encouraging requirements review and development throughout). A dedicated ‘PTFC Project Team’ will take responsibility for the project from the PTFC Committee, liaising with the developer and club members/Committee to coordinate PTFC involvement (identify/assign users for testing). Requirements and prototype evaluation will be overseen by the project team to assist the developer by co-ordinating activities, making formal decisions and providing feedback as a unified, formal response. Additional online facilities (web-form and email) will provide opportunity for direct feedback/communication, providing both quantitative and qualitative information. Review meetings and prototype evaluation forms are documented in appendix B.5 and B.6

The project schedule is outlined using Gantt Charts (section 1.10), with numerous project review points defined so as to ensure continual progress monitoring. These milestones (many with clear associated deliverables) are strategically placed and allow identification of deviations from the planned schedule (at which point corrective action can be taken if required). Throughout the project, various specially arranged sessions will maintain stakeholder involvement and provide feedback.

### **2.4.4 Justifying The Chosen Methodology**

The WISDM methodology was adopted since it fits most appropriately with the requirements of this project. WISDM is essentially a ‘technical-based’ approach, but also includes consideration of important human factors, especially during the analysis phase. This balance is ideal given the people-based context of the organisation/problem coupled with the desire for a technical (and indeed more specifically ‘web-based’) solution. This ensures particular focus on web-based issues in areas such as HCI design. WISDM also represents a ‘well-rounded’ thorough methodology, supporting all stages of development from strategy to evaluation.

As a recognised Rapid Application Development (RAD) technique, clear phases of development coupled with efficient targeted techniques make it quick yet structured, a key advantage given the limited time available. Effective progress monitoring is also facilitated, as is assistance in the production of supporting project documentation (an identified deliverable) via the recommended tools & techniques. An important 'Change Management Principle' (see section 2.6) identifies the need to

ensure continual and extensive end-user involvement during the development process. The decision to utilise a JAD session, prototyping and UML provides more than adequate opportunity to ensure this is the case. SSM and UML are techniques with which I have had past experience, meaning focus can be placed upon producing a solution rather than learning the methodology. JAD sessions will allow user requirements to be defined quickly and accurately, while supplementing them with more traditional information gathering techniques such as ‘interviewing’, ‘documentation analysis’ and ‘observation’, will ensure thorough exploration/understanding of the problem. UML notation will also allow development to be reviewed and validated, because diagrams can be relatively well understood by end-users. Evolutionary prototyping will facilitate incremental development (following user feedback), ensuring continual alignment with user requirements if/as they change. Phased development also reduces the likelihood of project failure by ensuring initial focus on attaining minimum requirements, with additional features being added dependent on resources (time) available.

WISDM was preferred to the more traditional SSADM primarily because it is quicker, more flexible, and able to cope with/encourage development of user requirements during the project. SSM alone does not provide adequate technical support to ensure effective implementation of the identified solution. While the problem could essentially be addressed via ‘business process re-engineering’ (increase member interaction via more training sessions), this is not what PTFC have requested.

## **2.5 The Proposed System**

### **2.5.1 Selecting An Appropriate Medium**

The PTFC system will rely heavily upon information distribution to club members and the general public. Various technology mediums exist which are capable of such delivery, however the characteristics of each vary considerably. Appendix C.5 contains a report evaluating the various alternatives. It was decided that the most appropriate approach was to construct a web-based system that is accessible via the Internet using a PC (see appendix C.6 for an explanation). The persistence and pervasiveness of the medium makes information accessible by anyone, anytime, and anywhere, facilitating effective non-simultaneous, distributed communication. The richness of the medium and relative ease/low cost of implementation were also identified as key overriding advantages given the user’s requirements. WAP technology provides the most competitive alternative because of its remote access possibilities via a mobile phone. This would be extremely beneficial because the system could be accessed on the training ground/pitches or while travelling to a match. Consequently WAP accessibility could be used to provide limited functionality such as checking whether a game has been called off, or getting directions to a match. It has therefore been identified as a possible project extension.

## **2.5.2 Justifying The Approach Of The Proposed Solution**

The following high-level requirements represent what PTFC want the new system to provide. Before continuing it is therefore important to ensure that the intended solution is capable of meeting these requirements:

1. store club information & knowledge
2. provide facilities for effective utilisation of stored information/knowledge
3. allow convenient access to the information/knowledge for distributed club members
4. provide facilities for effective distribution of club information into the wider community
5. help foster a greater sense of club-identity/spirit by encouraging social interaction
6. encourage sharing of football information/knowledge between individuals & teams

The approach selected involves creating a website with both public and private areas. The public area will be accessible to anyone and will assist with information distribution/advertising into the wider community (requirement 4). The richness of the medium along with its effectiveness in terms of durability and accessibility make it an extremely cost effective approach. Traditional alternatives such as advertising campaigns, producing club portfolios, holding events and sponsoring were concluded to be far less appropriate. The private area aims to include a chat forum and a database of information/knowledge, in order to meet requirement 5 & 6. Further more, the provision of a ‘high-tech’, highly accessible technological resource, it is also hoped will further enhance club-spirit, especially given the age range of the targeted user-group (children/teenagers). Given the distributed nature of members and the low potential for increasing ‘physical contact time’ ie. extra events/training sessions/gatherings, it was decided that the system should be fully accessible via the Internet (requirement 3). This represents an extremely convenient and accessible medium. Implementing a solution on a single PC, even with remote viewing (but not update) via an Internet connection would severely limit the effectiveness of the system. The non-existence of suitable secure/accessible ‘company premises’, exist also removes the possibility of creating a non-internet based network for members to use. A database was selected as the most appropriate means for storing information/knowledge because it structures the information and allows for effective utilisation through querying (requirements 1 & 2). The provision of a chat forum is focused on capturing less structured knowledge ie. making tacit communication/knowledge explicit, in addition to encouraging social interaction (requirement 5).

In the module IS34 (e-business & security), a model was suggested which represents the components vital in creating an effective ‘e-commerce’ infrastructure (C-SIT-F). It can be applied to this context to evaluate the appropriateness of the chosen delivery medium (WWW):

**Customer** – accessibility to a large number of people, any time, any place

**Seduction** – high richness of medium (photos, graphics, dynamic content, linking to databases)

**Information** – low cost of web-pages allows large amounts of information to be displayed. Linking to database allows customer to manipulate information to their requirements easily and effectively.

**Transaction** – Transaction of information is possible via email communications, modifications to database knowledge resources. If traditional ‘purchases’ are required this can also be easily facilitated.

**Fulfilment** – The ‘information-based’ nature of the PTFC ‘product’, means the provision of information counts as the fulfilment (physical coaching is then conducted on the basis of that information). A web-based system can deliver information extremely effectively.

### 2.5.3 Existing Packages

Analysis of existing solutions can be used to identify potential functionality for the PTFC system. A complete system does not appear to currently exist, highlighting the potential for competitive advantage:

#### **Football Operations Support**

PTFC wish to store fixtures/match information and player statistics. Good examples of such systems can be seen at: <http://www.theteammanager.com/about.asp> & <http://www.sportsconnect.net/intro.htm>. Both tools are relatively complex. They allow large amount of club information to be stored online and then re-used as appropriate. Fixtures can be logged and ‘team-sheets’ created. Player statistics and match reporting is also possible. A key feature of this system is that information is retained in a database and can then be re-used as required.

#### **E-Community**

E-communities have become increasingly popular over recent years. An example of a football related community can be found at: <http://www.sportnetwork.net/main/s342.htm>. While this site appears extremely complex, it can be broken down into fundamental features. A landing page provides ‘headline’ links to most important or timely information and could constitute a member’s home page in the PTFC system. Links to relevant information contained on the system can be found on the left side of the screen. News, league tables, player/team performance information are just some of the content included, similar to the information required by PTFC for each of its teams. In addition, more general e-community facilities can also be seen. A chat forum allows social interaction and discussion of football related topics. Opinion poll functionality is also included, with users able to vote on particular subjects and have results displayed. This could collect votes for ‘Player’s player of the year’ at the end of the season. This site is a good example on which to base a PTFC e-community. Access levels could be used to control access to different parts of the complete system.

## **Chat Forum**

A dedicated chat forum, can be seen at [www.corsasport.co.uk/board/index.php](http://www.corsasport.co.uk/board/index.php). The forum is split into numerous different ‘rooms’ and ‘sub-rooms’, so as to ensure topics remain well-organised. Each ‘conversation’ can then be created and posted, with replies appearing directly under previous responses, thus maintaining the conversation history. The author, date and time of the last response, along with the total number of viewings/posts is also recorded and displayed. Functionality also exists to allow searching for particular posts. Users are required to log-in to access the forum and their log-in name appears automatically next to their comments. The tool also provides a list of users who are currently online, and functionality for communicating directly with individual users. This allows messages to be sent to specific individuals rather than being ‘posted’.

### **2.5.4 Usability And The Human Computer Interface**

An effective interface can dramatically enhance usability and increase efficiency of use by reducing the need to consult a manual in order to operate the system. This is given added importance for the PTFC system due to the large volume of distributed users. Further more, the diverse range of potential users (younger children, less technically-able, non-club members), means a well-designed, intuitive and logical interface, would provide considerable advantage. Nielsen (2000) [14] identifies ‘Ten Points of Usability’ (see appendix C.7) which can assist development of both a technically efficient and useable system. While requirements do not insist upon a system which strictly demonstrates the characteristics, they will be used as a guide during HCI design to improve quality & assist evaluation.

## **2.6 E-Communities**

The term ‘community’ refers to a collection of people with common interests who interact to collaborate/share experiences/objectives. [15] Poulton Town FC can therefore be considered a community. However, due to the infrequency of physical interaction and geographical separation of individuals when not partaking in club organised activities, the effectiveness of knowledge sharing and community development is dramatically hindered. The World Wide Web can be used to overcome these geographical and ‘time of availability’ differences through the creation of an ‘e-community’ (“a group of individuals who primarily use the Internet for communication for achieving a common goal” [16]). E-communities are able to support social interaction, promoting the creation/strengthening of relationships and fostering a strong sense of ‘belonging’ in the same ways that traditional communities do.

In his paper “Building e-Community”, [17] Dr. S. Singh identifies 6 essential components of an e-community, to which PTFC’s aims and requirements appear to match extremely well. Football, and more specifically PTFC, can be identified as the “**basic background theme**”, while a “**well-defined purpose/aim**” is provided by the desire of the numerous members (“**willing participants**”) to initiate player/club development. The implemented system coupled with PCs/Internet connections will supply

necessary “**IT support**”, while a PTFC systems administrator provides effective maintenance/assistance. Usage guidelines and club contracts will outline “**communication structure/protocols**” (rules surrounding the use of the e-community). Finally Singh suggests an “**outcome**” is necessary ie. the results of e-community activity should be “synthesised and re-distributed as feedback”. This will be done by managers/coaches who monitor the e-communities, providing feedback on discussions facilitated by the tool.

VirtualEnvironments.net [16] (e-community developers) identify numerous useful e-community tools/features which should be considered for inclusion:

-**interaction/communication facilities** eg. *chat forums/instant messenger*, would enhance social interaction, improving club-spirit and allowing publication/discussion of ideas/opinions/concerns.

-**information distribution facilities** eg. *newsletters / email, bulletin boards & events calendars*, would allow increase the effectiveness of information distribution. Consistent information could be distributed to all club members, or specific teams/staff targeted. Even members outside the community eg. schools/other sports groups, could be targeted.

-**online services functionality** eg. *pledge donations, vote, obtain match weather information, get directions to opposition grounds*. Efficiency of football and supporting activities would be increased and participation/commitment levels eg. from parents/players, would probably improve.

-**information resources** eg. *knowledge database for tactics/training, player/team performance information*, would provide easy accessibility to a large volumes of football/club related information and would likely enhance player/team development.

-**member directory** would allow identification of knowledge experts and facilitate communication

## 2.7 Change Management

The desired solution involves a fundamental alteration to the current working processes and ‘organisational norms’. Therefore both ‘operational’ and ‘social’ acceptability will need to be achieved. While a well-designed system will play an important role, supporting and driving the change, its introduction alone cannot be expected to guarantee/constitute success. An effective change management programme is necessary to assist cultural change and increase the likelihood of success.

Pettigrew et al (1992) [18] define change management as “a focused attempt to create a system-wide change”. The Government Accountability Office [19] add “defining and instilling new values, attitudes, norms, and behaviours within an organization that support new ways of doing work and overcome resistance to change”. Numerous high-profile examples exist of projects which have failed because of ineffective change management, rather than technical failure. Consequently the change management programme to supplement Poulton Town’s Information System, will follow the “10 Principles Of Change Management” (see appendix C.8) highlighted by Aguirre et al (2004) [20]. An outline of the change management programme undertaken can be found in appendix L.3.

### **3. Analysis**

#### **3.1 Organisational Analysis**

##### **3.1.1 The Current System**

‘Task Descriptions’ provide an effective method of gaining good overall knowledge of the organisational environment. Defined as “an informative narrative description of human activities/tasks”, they allow “exploration and discussion of contexts, needs and requirements”. [21] The task description in appendix D.1 was documented following interviews/discussions with stakeholders and observation of working processes. It provides an overview of activities conducted at PTFC and highlights the current problems inherent with the old methods. Documentation detailing all end-user meetings (including interviews and observation day) is included in appendix B.5.

##### **3.1.2 Previous Systems**

The project team indicated that numerous attempts have been made to implement computerised systems, with limited success. Reasons attributed to previous failures include: lack of resources (projects taken on voluntarily by club members during spare time), technical inability/poor design, low levels of member involvement/commitment, and isolated systems (aimed at specific teams). The professional approach of this project should directly assist in overcoming these problems. Resources have been sufficiently allocated, while ‘university-standard’ technical skills should be adequate for creating the desired ‘club-wide’ system. An effective change management programme will also aim to encourage user involvement/commitment. Review of the most recently attempted system (an under 15s website -<http://www.freekick.fsnet.co.uk/>) revealed lack of functionality and an ‘amateur’ appearance were the key reasons for failure. The specific details identified and lessons learnt will be implemented directly during design. The system review report is included in appendix D.2.

##### **3.1.3 Strategy Analysis**

Skidmore (1994) [5] states “*strategy is concerned with the general direction and long-term policies of the enterprise*”. It is important to consider an organisation’s strategy during development because the system should be accurately aligned with the organisation’s long-term objectives/focus of development. Poulton Town already has a 5-year development plan, and the new system has been initiated specifically to drive development in 6 of the 9 identified areas. A thorough report which evaluates the system’s alignment and contributions to the PTFC business strategy, can be found in appendix D.3. It indicates that the proposed new system will form an important part of the club’s development strategy, and is appropriate in both concept and approach.

Ansoff (1987) [22] identified four elements which organisations generally use IS to develop their competitive strategy. While Poulton Town is a non-profit making organisation, the concept of a

competitive strategy is still important if the club is to remain operational and develop in the way its member's desire. In order to excel, the club needs to attract the best staff/players and have the best facilities. This will only be obtained through operation of an efficient business model which is able to provide the highest available levels of 'footballing support'. Information systems can provide:

### **1. Reduction of the cost of a product/service**

While the key concern will not be profit-making, cost-effectiveness of operations is just as vital to the success of Poulton Town. The club must obtain its own funding and although subsidies are provided, failure to cover costs would result in closure. An information system could reduce costs by:

- a) capturing 'football knowledge' and consequently increasing the return on staff/player training course expenditures, through increased utilisation, development, sharing (eg. passing on of abilities to helpers) and retention of the skills/knowledge gained (eg. if staff leave the club).
- b) increasing efficiency of administration/record keeping, allowing focus on more beneficial activities
- c) increasing efficiency of information distribution through pervasiveness of the information medium (WWW) and reduced necessity for production via physical mediums eg. printed newsletters

### **2. Increase revenues by offering a competitive advantage**

For PTFC increasing revenues will not necessarily be the sole driver for acquisition of a competitive advantage, even though increased funding would be advantageous in better service provision (facilities, paid staff etc). The club primarily wish to increase their standard of 'performance' in the football arena (ie. win more trophies, produce better players etc) by developing competitive advantage in the form of 'footballing support' offered to players/staff. The indented system has been identified as the best method for achieving this. Indirectly, increases in performance are likely allow acquisition of increased funding, better facilities, staff and players, driving performance improvement and further cycles of development.

### **3. Provide a market or image differential**

Portraying a more professional club image should attract better standard players, staff & sponsors. Most amateur football clubs reflect the current PTFC operations model and consequently do not operate in a professional manner. Doing so would allow differentiation from market competitors.

### **4. Provide Organisational Growth**

An information system would facilitate expansion of the club while retaining necessary levels of control. It would also potentially facilitate expansion into new activities eg. additional teams, girls teams, different sports, coach/referee training etc.

### **3.1.4 Organisational Modelling -Rich Picture & CATWOE Analysis**

A rich picture was constructed so as to give a graphical representation of the organisational structure and uncover any hidden issues/conflicts which may be relevant to the project. CATWOE analysis was then conducted to identify and profile all relevant stakeholders. Supporting diagrams can be found in appendix D.4 and D.5.

### **3.1.5 Knowledge Management**

Brown and Duguid (2002) [23] define knowledge management as “the use of technology to make information relevant and accessible wherever it may reside”. The definition then goes further to suggest “to do this effectively requires the appropriate application of the appropriate technology for the appropriate situation”. It is clear therefore that knowledge management will play an important role in the solution desired by PTFC. Creating ‘knowledge maps’ allows the numerous forms of knowledge/information contained within an organisation to be explicitly identified, along with the associated individuals/distribution methods. This assists in the development of a solution appropriate to the needs of the specific organisation.

Both current and desired knowledge maps were constructed and can be found in appendix D.6. They reveal that the PTFC system will need to provide:

- Ability to store and provide remote access to durable (non-volatile) information & knowledge sources (with appropriate organisation /structuring to aid retrieval).
- Forums & e-mail for dynamic information sharing (to replicate traditional ‘physical’ tacit knowledge exchanges, while also making exchanges explicit so they become durable/re-useable)
- Ability to capture large amounts of tacit knowledge, structure it and make it explicit for re-use
- Ability for members to identify and communicate with knowledge experts (directory of club experts/members with details of associated knowledge bases and contact details)

## **3.2 Information Analysis**

### **3.2.1 Gathering Requirements**

Requirements were established during two JAD sessions with members of the PTFC project team, Committee, and representatives of key stakeholder groups. The first session began with brainstorming and an exploration of ideas/issues surrounding the potential system. Members were encouraged to describe all the features they thought may be of benefit, irrespective of perceived practicality. Notes from the meeting were then collated into a usable document and distributed to the project team for review. They subsequently constructed a prioritised list of requirements by evaluating practicalities/benefits, and consulting other club members to gain opinions/expert knowledge. Throughout this period I was available via telephone and email in order to discuss ideas and offer expert technical advice regarding what was possible/feasible. In some instances this required

additional research into areas previously not covered. Once the requirements had been formally reviewed and prioritised, a second JAD session was conducted with the same members to discuss the list and complete high-level system modelling.

This approach was adopted primarily to ensure thorough exploration and review of all potential requirements. It was hope that by allowing time for idea development and internal consultation with experts/stakeholders (without the presence of the developer), a more accurate list of prioritised requirements would result. Although prototyping allows modification to requirements throughout development, accuracy and completeness at the outset is advantageous in avoiding delay. Involving a variety of stakeholders both directly and indirectly, also follows the “10 principles of change management”. Encouraging the club to conduct its own requirements review, involving additional stakeholders to consider their opinions, knowledge and needs, increases the level of perceived solution ownership and therefore the likelihood of acceptance and consequently success.

### **3.2.2 Functional Requirements**

The list of prioritised requirements formulated by the PTFC project team is included in appendix E.1.

#### **Priority 1: must have**

The system will consist of a website to display club information. This will be viewable by anyone and will help to provide the club with an increased presence in the local and worldwide community. This will assist in developing the club image and recruiting new players. In addition it will allow information to be displayed permanently, making it easier to distribute than with current methods. Information to be displayed includes; club rules, club history, player/team profiles, advertisements, sponsors, events information, notices, links to affiliate/information sources

A secured area of the website is also required to display member-only information. Username and password access tokens will be necessary, with varying accessibility to pages depending on the user eg. players cannot access data input pages, unlike coaches/managers. The secure area should contain general information and team homepages, both of which can display static information and notices.

The key functionality of the system will be the information system & knowledge resource, made up of numerous databases with appropriate data summarising/input/querying support. These will store information/knowledge relating to: members, teams, fixtures/matches, tactics, training/drills, injuries.

Required functionality to utilise the data must include:

-player performance reports (average rating, Man-Of-Matches, appearances, goals)

-team performance reports (W/D/L, points, goals for/against, team ratings, form)

-generation of a match preview and match report

-tactics lookup (searchable by keywords, sorted by sections)

-injury identification (searchable by keywords, sorted by sections)

-training session/drill planner (training session templates which can be saved and later re-used/shared)

### **Priority 2: should have**

A chat forum for PTFC members is desired to increase member interaction. It must be possible to add and remove rooms (staff only), discussions and posts. Identification of post authors should be provided automatically via the login facility to create accountability for comments. The interface/functionality should resemble that provided by [www.corsasport.co.uk](http://www.corsasport.co.uk) (see section 2.5.3).

Another important feature is the ability to provide online services. The club would especially like functionality to support the booking/allocation of facilities. They would also like to be able to provide directions to opposition grounds for members and weather information for fixtures/training to assist staff/players in preparing appropriately. The ability to easily identify and contact other members would facilitate identification of knowledge experts and allow communication with them.

### **Priority 3: could have**

A dedicated events calendar has been suggested as useful in helping make members/the public aware of the fund-raising events the club arranges. Other services which the club think could be advantageous include pledging donations online so as to increase revenue, booking tickets to events and ordering club merchandise. Conducting online voting ‘Player’s Player Of The Year’ is also seen as a potentially advantageous feature. Functionality which allows parents to indicate if they are available to provide transportation to away matches has also been identified as beneficial. The ability for users to provide feedback regarding the site would help identify problems and evaluate potential improvements.

Club administration functionality is seen as a useful addition to the system because it will increase the efficiency and effectiveness of committee members in controlling club finances. It has however been identified as low priority because spreadsheets used currently are seen as acceptable. Email could be used to collect invoices/expense claims however. If resources permit functionality desired includes: Expense management; money in/ out records with auditing, donation logging/forecasting, managers expenditure submissions, spreadsheet of club finances, printable invoices and receipts (for audits), fine control –mail-merge into invoices

### **Priority 4: wont have**

A real-time chat facility is not required because it may reduce use of the forum, contradicting the aim identified by the knowledge maps to convert tacit knowledge into explicit knowledge. A newsletter distribution facility is also not required because PTFC are looking to discontinue their use, instead encouraging members to access the proposed system. Not only are newsletters time-consuming to produce but the information they contain quickly becomes outdated. Information displayed on the system however would be continually up-to-date. Online ‘club’ email is also not required as it would not provide any particular advantage and is available free from sites like Yahoo.co.uk.

### **3.2.3 UML Modelling**

UML modelling was used to increase understanding of the requirements and allow effective consultation with the end-user. Diagrams can be found in appendix E.2. A use case diagram, with associated descriptions, highlights functional requirements. An ER diagram is used to represent the conceptual relationships between PTFC entities, while a state diagram is used to outline how the log-in system will need to work.

### **3.2.4 Non-Functional Requirements**

#### **-Performance & Availability**

The system must be able to cope with multiple simultaneous users (around 50) and still provide reasonable performance. Periods of intense load are expected before/after matches/training and the system must be robust enough to cope. Load is likely to consist mainly of querying, but with also considerable data input. System availability is not critical, however minimal down-time/system crashes are obviously desired.

#### **-Security**

Ensuring restriction of access to private areas will be vital to maintaining the key competitive advantage which the system is intended to provide. An in-depth report evaluating necessary security considerations for proposed PTFC system can be found in appendix E.3. It identifies the key importance of maintaining data confidentiality and integrity. Effective security functionality will be needed to ensure system content is only visible to, and can be edited by, authorised users. An appropriate access model will need to be constructed in order to implement this (taking into account the concept of ‘least privilege’ to restrict unnecessary access rights). Access tokens will take the form of usernames and passwords, with business processes being implemented by the club to manage their effective use. The system should ensure safe and graceful degradation in the event of a breach, while testing should seek to ensure appropriate implementation of the identified model. Security threats posed on the system are relatively limited due to the non-financial and relatively specialised nature of the information content, along with the low motivations and abilities of the most likely attackers. Consequently moderately sophisticated security functionality coupled with appropriate supporting business procedures should be perfectly adequate.

#### **-Data Integrity**

Data integrity and consistency will be ensured using a relational database approach, while validation and verification rules will seek to ensure data quality. Design and implementation of appropriate backup procedures (weekly) and facilities will be needed to prevent data loss.

#### **-Future Development**

The club specify that they would like the system developed/constructed in a way which allows it to be expanded/developed further in future. Projects would likely be undertaken by either club members or as further student projects through PTFC’s ‘links with schools’ scheme. In both cases however it can

be assumed the individual will possess relatively high levels of skill/ability and development of complex features should not be hindered by this request.

### **3.2.5 Feasibility Study**

A feasibility study is intended to assess the viability of the proposed system. It also identifies any relevant issues which may affect the final system/the organisation and therefore need consideration. Kendall and Kendall (2002) [24] suggest that a proposal must demonstrate feasibility in the following areas if it is to be considered appropriate:

#### **-Organisational**

Section 3.1.3 revealed that the proposed system is effectively aligned with the strategic aims of PTFC. Extensive background research also indicated that the scope of the system is appropriate, offering potential increases in both efficiency and effectiveness, while focussing on the core processes of; member communication and collection/sharing/development of football related knowledge.

Considerable support appears to exist from the majority of club members, mainly due to that fact that motivation for undertaking the project derives from an ‘opportunity’ to enhance the club, rather than solve an inherent problem. This strong, positive starting position, coupled with club members’ shared vision to be revolutionary and gain a competitive advantage, creates an ideal environment within which to conduct the project (minimal resistance and high stakeholder dedication). This is enhanced by the fact that the majority of club members are also voluntary (non-paid), meaning their support likely derives from genuine dedication/loyalty to the club, and therefore the project. In any case, the methodology has been purposely designed to ensure extensive involvement of numerous key stakeholders (identified in CATWOE analysis) throughout the project. Special ‘user involvement meetings’ (documented in appendix B.5), supplement prototype testing to encourage involvement and ownership from those who will ultimately decide the success of the project.

#### **-Operational**

It will be important to ensure the system is able to effectively fit into club operations. Design and introduction of supporting business processes has therefore been identified as a project enhancement, as has staff training. While user manuals could be effective (particularly for staff), as explained in section 2.5.4, an effective user-interface which can be operated intuitively would be more beneficial. This should therefore be reflected in HCI design. A potential problem may be the system’s effect on current work practices, most specifically an increase in work-load for managers/coaches. When presented with this suggestion, the Committee decided to address the problem by adding the responsibility into manager/staff contracts. This was judged as justifiable return for the considerable financial investment PTFC make in their staff (training and qualifications). Staff will therefore be required to use the system as part of their duties, in order to “give something back” to the club ie. managers complete match reports, coaches provide training plans/technique tips.

PTFC comment that the system is primarily being provided as a facility for its staff and consequently no additional obligations/responsibilities will be placed on players. Their use of the system will be purely voluntary. The strategic aim therefore is not that the new system should *replace* existing processes/methods of communication, rather provide an *additional* facility which players can utilise to their advantage if they so wish. This overcomes the potential technical problem of ensuring all players have access to necessary computer facilities. The club indicate they would be able to provide adequate technical facilities/support to their staff in order to allow them to fulfil their responsibilities. The technical skill-level required to use the system must, as a minimum, be aligned with the competence of key stakeholders. In order to ascertain the technical ability of members (players & staff), a meeting was arranged with the project team, Committee and numerous stakeholder representatives (meeting 8 in appendix B.5). The aim was; to gain knowledge of the various users' computer abilities, gather relevant information/opinions/ideas for the new system from key stakeholders, and ensure high levels of stakeholder involvement in the project. Results revealed that most staff considered themselves to be at least 'competent' ("able to use the internet and basic word processors/office packages confidently and competently"), while players indicated themselves as 'highly skilled' due to their school studies and personal experience ("able to use confidently use; advanced features of computer packages such as databases and spreadsheets, and online tools such as web-based email"). Ongoing technical support for the system will be provided by two members of the project team who have considerable experience in 'ICT-based' jobs and will become systems administrators. This greatly assists the operational implications associated with maintenance.

### **-Technical**

The intended 3-tier architecture (see section 4.2.4) should provide adequate technical capabilities to implement the requirements. Following Nielsen's guidelines during design should allow creation of an appropriate user interface. Server-side technologies will also allow security functionality to be implemented by controlling/restricting the content returned to the browser.

PTFC do not currently own any hardware. Fortunately, a web-based architecture means the club can take advantage of privately owned hardware to facilitate access. Prior to the JAD session, the project team called a meeting with its members to ascertain their ability to access the WWW and consequently approve the intended approach. Most staff accepted the proposal, indicating they would have the means to access such facilities on the required basis (once per week). All players claimed they would be able to access the system if they wanted to use it (either at home, school, library, friend's house). This is supported by the Government's commitment to ensure all UK citizens have accessibility to the Internet by 2005. The lack of company premises and relative cost of purchase mean 'hiring' necessary hardware/software from a service provider represents the most cost-effective approach. Initial research reveals numerous service providers which are able to provide the facilities required. They will be evaluated in terms of bandwidth provision, storage space, software support, email domains, technical assistance provision and price.

### **-Economical**

Cost effectiveness can be defined as “monetary cost compared with returnable benefits”. Free development (because the system is being constructed as part of a final year project), means the only financial costs relate to hosting the system once it is delivered. The voluntary nature of club-members also means no ‘opportunity costs’ in the form of time spent working on the project (defining requirements, testing etc). The abundance of potential benefits to the club in terms of player/staff development, although hard to quantify, present an extremely attractive proposition. The system may also help increase revenues through better attendance at fund-raising events and justification for increased subsidies from the Council/FA and sponsors.

### **-Legal**

Data and system security was identified as a vital consideration since remote web accessibility dramatically increases the system’s vulnerability. Thorough analysis of PTFC’s responsibilities under the Data Protection Act (see appendix E.4 for report) revealed that most information to be stored is not covered. Some subtle changes were made to requirements to ensure this eg. removal of ‘referee rating’ in match reports. Never the less, it was decided that the guidelines of the Act should be followed wherever possible so as to avoid any future complications and help maintain data security.

### **-Schedule**

The fixed deadline means it is important to consider the viability of the schedule. The Gantt chart created at the outset of the project indicates implementation and testing should be completed by 03/04/06. Schedule modification has since extend implementation and testing, including some overlap to represent the change to a ‘phased’ approach. Implementation should be finished by 13/03/06, however the testing period and ‘flexibility’ provision means 10/04/06 is the absolute deadline for system completion. This schedule is both realistic and achievable, with a reduced workload (fewer university modules) during semester 2 expected to allow greater focus on project activities.

The study indicates that it is feasible to continue with the project and that the proposed solution is so far appropriate in light of the identified requirements.

### **3.2.6 Risk Assessment**

In order to be justified as feasible, Flynn (1992) [9] suggests that a project should also carry a low level of associated risk, with effective risk management being indicated as vital to ensuring project success. Cobland’s Consulting [25] identify risk as a balancing of uncertainty and constraints. Risk can be eliminated/reduced by either addressing constraints (avoiding high risk activities / modifying activities to reduce associated risk) or reducing uncertainty (understanding the risk so as to reduce the effects via contingency plans/ risk sharing with other parties eg. stakeholders). Since total elimination of all risk is unlikely, effective management of any remaining risk will be vital. The concept involves: ‘Risk Assessment’ and ‘Risk Control’.

## **Risk Analysis**

A full risk analysis report is provided in appendix D.5. It identifies the following key points:

- overall **project risk is moderate and acceptable**
- the **likelihood of total project failure is low**, with minimal impact on PTFC because of the lack of necessary financial involvement. The major commitment relates to time, however the fact that most members are volunteers, means this does not represent a serious risk. Risk associated with total failure lies mainly with the developer because the project is part of university degree assessment.
- **Poor quality implementation represents the largest risk to PTFC** because of a potential mis-alignment of interests between PTFC and the developer, who may look to produce a solution which simply attains a high grade rather than solving the identified problem most effectively. Further more there is a large potential impact on PTFC from using an inadequate system, especially if it relates to security (reducing existing competitive advantage), or reduces member satisfaction/commitment.
- **Project schedule over-run / incomplete implementation represents the greatest overall project risk** due to the fixed submission deadline, with no delivery-date flexibility. While it may be possible to construct a report without completing implementation, quality is likely to be seriously reduced. The likelihood is increased further by the relative complexity and long duration of the project, along with the developer's relative inexperience using the identified technologies.

## **Risk Control Policies**

In an attempt to negate the identified risks, the following risk control measures will be implemented:

- **Costs will be paid for by the developer and reimbursed by PTFC Committee when justified.**
- **The PTFC project team will share responsibility for project progress monitoring** so as to ensure the schedule is adhered to. The developer will communicate planned schedules to the project team who will ensure club resources are available when required and that deliverables are received on time/to the appropriate standard. The developer will also attend meetings with the university project supervisor and meet all university deliverable deadlines.
- So as to ensure a complete solution, **phased development will focus initially on attainment of minimum requirements**, before progressing to any further features/functionality.
- **PTFC will take a large responsibility for end-user prototype and acceptance testing/sign-off during the project and prior to formal hand-over.** This will enable better use of developer resources, allowing simultaneous testing and development. The developer will however be responsible for ensuring any system functionality is appropriately tested prior to release.
- To ensure quality, **all design/implementation decisions should be justified by appropriate research and problem analysis.** Documentation must be available to PTFC for review if requested.
- **Regular project reviews must be conducted by the developer** to ensure effective progress monitoring and corrective action if required. Flexibility in the schedule will be reserved for unforeseen delays. In the event of serious delay/problems, a crisis meeting will be called between the developer and PTFC so as to identify forward action and re-define requirements.

## **4. System Development -Phase 1: Website & Information System**

### **4.1 Approach To Development**

Design/implementation was separated into distinct phases of development, based upon the prioritised list of requirements provided by PTFC (appendix E.1). This approach is supported by the fact that the proposed system can be largely identified as consisting of numerous inter-connected components (website, database, chat forum, web services, calendar etc). Completion of phase 1 will achieve minimum requirements. Subsequent phases will be developed depending upon available resources.

#### PHASE 1 = Website & Information System

- |   |                   |
|---|-------------------|
| 1. <i>Website to display club information</i>                         | <i>Priority 1</i> |
| 2. <i>Secured members area – usernames &amp; passwords</i>            | <i>Priority 1</i> |
| 3. <i>Display secure club information, inc team pages eg. notices</i> | <i>Priority 1</i> |
| 4. <i>Database information store for - fixtures/match information</i> | <i>Priority 1</i> |
| - member details  | <i>Priority 1</i> |
| - tactics/training/injury knowledge                                   | <i>Priority 1</i> |

#### PHASE 2 = E-Community: Chat Forum

- |                                       |                   |
|---------------------------------------|-------------------|
| 5. <i>Chat forum for club members</i> | <i>Priority 2</i> |
|---------------------------------------|-------------------|

#### PHASE 3 = E-Community: Member Directory & Communication

- |   |                   |
|---|-------------------|
| 6. <i>Identify And Contact Key Club Members</i> | <i>Priority 2</i> |
| 7. <i>Member Directory</i>                      | <i>Priority 2</i> |

#### PHASE 4 = Online Services

- |  |                   |
|--|-------------------|
| 8. <i>Online services- book facilities, directions, match/training weather</i>     | <i>Priority 2</i> |
| 9. <i>Events Calendar</i>  | <i>Priority 3</i> |
| 10. <i>Online User Feedback Facility</i>   | <i>Priority 3</i> |
| 11. <i>Online services- donations, vote, indicate availability for games/lifts</i> | <i>Priority 3</i> |

#### PHASE 5 = Club Administration

- |  |                   |
|--|-------------------|
| 12. <i>Club Administration Functionality</i> | <i>Priority 3</i> |
|--|-------------------|

### **4.2 Technology Choices**

Darlington (2005) [26] lends support to the use of prototyping during web systems design, suggesting that an “iterative process” of refinement will often be required before the final design appears. He recommends the following as important in effective web-system design; identify the tools/techniques that will allow effective implementation, create a site map, and create the visual design and user interface.

#### **4.2.1 Mark-up Languages/Standards**

Darlington (2005) [26] states that HTML is the “primary means of describing web content”, with Avison et al (1995) [1] referring to it as the “native language of the WWW” because it provides a standard language all browsers can interpret. XHTML does not differ that much from HTML. W3C however suggest that its incorporation of the rigour of XML allows generation of richer websites accessible by an increasing range of browser platforms. As the latest standard and a likely facilitator of future web development, XHTML has been chosen as the web-page mark-up language. Stricter discipline regarding syntax accuracy will also help ensure high-quality coding, preventing appearance inconsistencies due to differences in browser interpretation. Another advantage of XHTML is that it allows for extension beyond the standard range of attributes and tags with specific modules assisting developers in writing code for devices such as mobile phones/PDAs. Identification of WAP access as a potential enhancement, means using XHTML will assist in system development.

Support of Cascading Style Sheets (CSS) allows separation of content and appearance, allowing greater control over appearance type and consistency throughout the site, with changes replaced automatically. XHTML will therefore be used to define structure, with CSS controlling formatting.

#### **4.2.2 Database Technology**

A variety of different databases exist which are capable of storing the required information. [27] The decision was made to use a ‘relational database’, primarily because of its suitability to distributed applications and my own experience using them. A fuller justification is included in appendix F.1. Evaluation of specific database technologies resulted in the decision to utilise a two-phased approach. Originally it had been decided to implement a Microsoft Access database in the interest of ensuring rapid application development (justified as part of the mid-term report). However subsequent research (see appendix F.2) evaluated that the necessity to handle a high number of simultaneous users would prevent this, prompting a shift to MySQL. The discovery, and successful testing, of functionality provided as part of MS Access 2003 which allows databases to be “upsized” into MS SQL Server databases, however motivated a further change.

Implementing databases initially in MS Access during prototyping and development will allow rapid application development and is perfectly sufficient for evaluating the design and testing the functionality with end-users. Prior to system deployment, the finalised databases will be “upsized” automatically into a production-standard technology. All identified hosting companies provided support for both technologies, with the increased cost of MS SQL over MySQL, being justified by PTFC, who considered the trade-off of increased functionality provision to be more important.

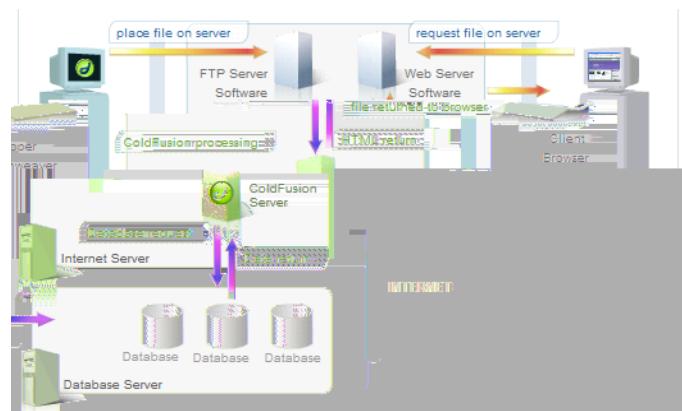
#### **4.2.3 Server-Side Technology**

Server-side technology will be used to retrieve information from databases and control content sent to the browser. Various languages are available, however ASP, PHP and Coldfusion were identified as

the key contenders since they focus upon providing quick and easy access to databases. While more complex graphical interfaces could be implemented using languages such as C++, [1] the requirements and time availability make using such ‘heavy’ languages impractical and unnecessary. Following through evaluation of the alternatives (see appendix F.3 for full report), Coldfusion was chosen. Its open-source, ‘tag-based’ syntax and compatibility with a variety of databases will allow rapid development and provide effective support of future development by non-expert users. The key advantage offered in comparison to the primary alternative, PHP, is that Coldfusion is able to connect to any ODBC database (unlike PHP which can only use MySQL). This would for example allow club members with limited technical ability, to develop the system by integrating additional ‘simple’ MS Access databases, irrespective of what other database technologies are in use. Further more, the extensive built-in security functionality offered by Coldfusion is likely to prove advantageous, as is its use of standard SQL statements to query databases. This will allow exploitation of past experience using SQL to create complex querying/reporting functionality, an identified requirement.

#### 4.2.4 System Architecture

The WWW’s generic client-server model (see appendix C.6), will be extended into a three-tier model, to facilitate more dynamic, appealing content and increase security. [1] The three layers are identified as ‘User Presentation’ (appearance), ‘Business Logic’ (functionality) and ‘Business Data’ (storage). The first-tier will handle presentation elements, utilising XHTML (webpages) and JavaScript client-side technology. Client-side technology facilitates alterations to the page after it has been downloaded from the server. It will be used to enhance the appearance of the web page as the user interacts with it (eg. as the cursor passes over a button) and validate input forms without repeatedly contacting the server. JavaScript was preferred to the other major alternative, VisualBasic (VB), because as Darlington (2005) [26] notes, VB is only compatible with the ‘Internet Explorer’ browser, greatly limiting its usefulness. JavaScript is also based on C++, a language with which I have past experience. The second-tier will implement business logic using Coldfusion server-side technology. When initiated by the first tier, Coldfusion will be responsible for processing requests, customising the content of pages before returning them to the presentation-layer (browser) for display. Typically this will involve querying databases to populate pages or restrict visible page content depending on the user’s access rights. Third-tier databases will be located in separate ‘secure’ folders, protecting them from being accessed directly by the client, increasing security. The diagram [28] opposite provides a visual representation of how the described 3-tier architecture will operate.



## **4.3 System Design**

### **4.3.1 System Structure**

The UML diagrams contained in appendix F.4 highlight the deployment of intended system components. [29] ‘Site maps’ can be used to describe logical structure of a website (the system), identifying required pages/links and providing an indication/description of content.[26] They also act as a useful visual aid for discussion with stakeholders.

‘Site maps’ created as part of design, and modified via user feedback can be found in appendix F.5.A ‘hierarchical’ structure is used since it is well-suited to large sites with large groupings of content (related pages). ‘Section heading pages’ identify content groups, with specialisation increasing with depth in the structure. This approach also makes adding/removing pages relatively easy, greatly assisting future development. Navigation bars on all pages will allow direct access to key functionality and provide adequate navigation functionality without overwhelming the user.

### **4.3.2 User Interface & Visual Appearance (Webpage Design)**

A meeting with the PTFC project team to discuss the system interface/appearance, identified key HCI requirements (see appendix B.5, meeting 10). It was stressed that the overall colour scheme should use the club colours; ‘black and orange’. It was also specified that the overall appearance/style should convey ‘professionalism’ so as to reflect the professionalism of the club and the ‘value’ of the system as a high-functioning tool. A navigation bar was validated as an effective means of providing access to functionality, with the general request to ensure the system is “user-friendly to allow users with limited skill to use it”. Beyond this no specific requirements were made and it was agreed that the HCI should follow recommendations identified in research. The formulated design is outlined below:

#### **Page Layout**

Brink et al (2001) [28] highlight consideration of the following factors in effective page layout design:  
Consistency & Simplicity: Consistency “aids navigation and gives the site a greater sense of structure” [30]. For this reason a standard page structure was adopted. The title frame and navigation bar remain the same in both content and location on every page. The only deviation occurs after log-on because members have additional functionality. To improve consistency, a separate member’s bar is added above the standard navigation bar. Consistent backgrounds, text formatting, icons/web features (eg form components) are also used throughout. Following the recommendations of Darlington (2005), [26] a page template (“stencil/pattern, the structure of which can be copied from page to page”) is used to ensure consistent page layout. ‘Server-side-includes’ will also allow common features eg. navigation bars, to be defined once and automatically included on each page. This assists with maintenance because changes to common elements need only be made once. The decision to use CSS replicates this concept to allow central control of presentation. A simple and uncluttered appearance is aimed as assisting users in focusing on information content.

**-Page Size:** Traditionally designers ensured pages were able to fit on the lowest common resolution (640x480), however as explained by Nielsen (2000) [14], this reduces the visual impact on larger monitors. Therefore the system will utilise ‘liquid pages’ which expand/contract accordingly to fill the screen, ensuring optimisation for all users. While the navigation bar will be fixed in size to maintain consistency, the ‘content’ section will automatically expand/shrink to fill the remaining space.

Using a ‘mock-up’ (interface prototype) allows representation of likely appearance and interaction/navigational capabilities. This facilitates quick and effective user feedback without high cost or time demands of full implementation. [1] Mock-ups are contained in appendix F.6.

### **-Navigation**

**-Menus:** In order to facilitate navigation and functionality provision, menus with appropriate content (depending on the privileges of the user) appear on all pages throughout the site. These ensure a consistent appearance and provide hyperlinks to other areas of the site, leaving the primary window to focus upon content delivery. Pages were however created using tables rather than frames to separate the different ‘windows’. Neilson (2000) explicitly discourages use of frames because they break the “unified model of the web”, often resulting in inconsistent navigation-content combinations.

**-Title Bar:** The title bar is included so as to provide a consistent heading on all pages, reinforcing the perception of quality. If users access a page directly (rather than via the homepage), the context of the page (PTFC) will instantly be recognisable. Like navigation bars, the title bar also helps break up the page, separating non-page-specific features (eg. PTFC logo, ‘home’ hyperlink) from ‘main content’.

**-Navigation Menus:** In line with Darlington’s recommendations, the navigation menu is located on the left side of the screen and runs the length of the page. Its purpose is to provide a common, unchanging set of links, to assist with navigation. Groups of links are separated appropriately under relevant headings. A google.co.uk search bar is also included. This ‘web-service’ approach increased functionality and speed of implementation over implementing a search engine manually. The member bar (menu) appears only when a user has logged in to the system and varies so as to only contain functionality the user can access. This reduces the number of error messages caused when attempting to access restricted pages, increasing usability. Prominent positioning above the navigation bar also reflects the increased relevance of its functionality when a user is logged on.

**-Identifying location:** Darlington notes the importance of ensuring users are always able to identify their current location within the site structure. Page title alone is unlikely to do this effectively, especially in larger sites, so ‘breadcrumbs’ offer an effective solution. These have been used to provide details of root structure back to the home page eg. home / members area / chat forum.

### **-Appearance**

**-Text:** Following the advice of Neilson (2000) [14] ‘relative’ rather than ‘absolute’ text sizes will be used because text is then defined relative to the user’s own preferences, increasing accessibility /satisfaction. Darlington’s (2005) [26] recommendation to only use standard fonts (Arial, Verdana and

Times New Roman) will be followed to increase consistency. Where more elaborate fonts are required for aesthetic purposes, text will be converted into graphics eg. title bar heading. Hyperlinks will be distinguished from normal text using the conventional blue, underlined styling, to allow easy recognition. Menus are the only place this convention will not be followed, where JavaScript roll-overs will increase visual-appeal and aid usability by identifying elements for selection.

Colour scheme: The requested black and orange colour scheme is discouraged by Darlington because such extreme colour combinations make text difficult to read. Bright orange is specifically discouraged for professional websites, because of its “childish appearance”. Despite this however, advertisers often recommend black with orange *highlighting* to convey ‘quality’ and ‘expense’, so this approach will be used for the title and navigation bars. To allow text to be read easily, legible colours such as white and blue used against the black background, while main page content (displaying large amounts of text) will use the highly-legible combination of black text on a light grey background.

Graphics: The three main web-graphic formats (gif, png and jpg) are to be used, however in line with Neilson’s recommendations, graphics usage will be limited to where they assist in communication of information. PTFC have supplied a series of images which can be used to personalise the system. So as to maintain low costs, additional graphics will be obtained from free online sources such as [www.freebuttons.com](http://www.freebuttons.com). Further detail regarding design decisions is included in appendix F.7.

### 4.3.3 Database Design

The relational database structure is detailed in appendix F.8 along with a supporting class diagram. Entities and attributes were identified (and later refined) through consultation with the project team during (and subsequent to) the second JAD workshop. A summary of the ER modelling concept is contained in appendix F.9. A key concept associated with effective relational database design is ‘normalisation’. “If relations (tables) are in normal form, then there will be minimum data redundancy and minimum chance for things to go wrong” [31] An overview of the normalisation concept is provided in appendix F.10, while the process followed to derive the structure [32], is outlined below: In order to convert from un-normalised to **1NF**, it was necessary to ensure no attributes contained multiple values, for example ‘contact information’ was broken into ‘home\_tel’, ‘mobile\_tel’ and ‘email’. It was also necessary to ensure every non-key attribute could be referenced by a primary key. In most instances this involved adding an ‘id’ field. As part of this process, duplications of attributes within the same entity were separated into new tables. As an example ‘player’ details were separated from ‘match’ because matches have many associated players. Whenever additional entities were created, the primary key of the original table was inserted as foreign key to form a relationship. **2NF** requires all attributes within an entity to be identified by the “whole primary key and nothing but the primary key”. An example of a separation completed during this phase was ‘referee’ details from ‘match’. A referee can control multiple matches so the match would not uniquely identify the referee. **3NF** dictates there must be no dependencies between non-key attributes. This required splitting

`away_ground` from opposition, since the details (eg. postcode), of an away ground are dependent on the `away_ground_id` rather than the opposition.

A problem experienced when creating the tables was how to structure member information, since the information stored varies depending upon role. The decision was made to implement a members table (`LoginD`) which contains standard personal information and systems login details. Foreign keys are used to link to records in ‘player’ or ‘staff’, which contain further information if necessary. Similarly for facilities, the differing information to be stored for home and away facilities dictated the creation of separate ‘facilities’ (home) and ‘away\_grounds’ tables, linked to matches using foreign keys.

#### **4.3.4 Integrity Constraints & Business Rules**

Data integrity will be largely ensured through normalisation. Primary keys will uniquely identify individual records. In most cases this will be achieved via ‘auto-number’ id fields, however `player_match` will use a combination of `player_id` and `match_id`. Foreign keys will maintain the relationships between data stored in different tables, while referential integrity will ensure inclusion of valid foreign keys. This will also be facilitated through dynamic population of drop-down menus eg. when selecting players for match reports. Entity integrity will ensure primary keys are always unique and not ‘null’. Numerous input validation rules will help increase the ‘quality’ of inputted information. For example, ‘date format’ field-types will be used for dates, while player ratings will be range restricted (1-10). Where appropriate, data input interfaces will also restrict selectable values using drop-down menus. This is especially useful for non-numeric validation and business rules.

#### **4.3.5 Security**

Coldfusion provides an extensive built-in security model which will enable log-in functionality to be created to protect private pages in the system with usernames and passwords. Databases will be stored in a separate, secure ‘db’ folder to prevent direct access. The Coldfusion security model also allows the content of each page to be varied depending upon the access rights of the user. When Coldfusion processes the requested page, it will only return the elements which the user is authorised to view. Access rights for each user will be held in the `LoginD` database and saved into server-cookies when the user logs-in. They can then be referenced for the duration of the session. Elements surrounded by such functionality will include: member navigation menu content (so users only get links to pages they can access) and add/edit/delete functionality for database information sources.

#### **4.3.6 Hosting Options**

Numerous hosting providers were researched and considered in an attempt to find the most suitable provider. Appendix F.11 contains a comparison of two leading quotes. ‘Host-it’ was chosen primarily because they offer a monthly ‘rolling’ contract which can be cancelled at any time. This will allow PTFC to evaluate the effectiveness of the system and if desired/necessary, cancel hosting without

incurring any great financial loss (risk reduction). Further more, Host-it also offer 50% discount to students, minimising costs during development. Superb customer support and WAP access provision are also likely to be advantageous during development and after deployment.

#### 4.3.7 Tools To Assist Development

Both quality and speed of development can be increased through the use of appropriate supporting software tools. Specialist tools for writing HTML and Coldfusion will be used in preference to a standard text editor because they assist with auto-code-generation and syntax checking. Despite past experience with Microsoft Frontpage, [33] **Macromedia Dreamweaver 8** has been chosen because it offers better assistance writing Coldfusion (another Macromedia product). The package also comes with a Coldfusion server which can be utilised during development to test implementation. This will allow new code to be tested off-line, supporting simultaneous development and end-user testing. Dreamweaver also integrates seamlessly with MS Access 2003, which will be used to assist rapid applications development during prototyping. Built-in functionality will then convert the database to MS SQL Server prior to deployment. Graphics will be edited using **Adobe Photoshop CS**, which supports all formats identified for use. **Rational Rose** will ensure accurate construction of UML diagrams, outputting them in a clear, user-friendly format. These tools have all been selected specifically because of their appropriateness in assisting a professional RAD approach.

### 4.4 Implementation

This section contains an overview of the implementation phase and is therefore heavily supplemented by appendix G which contains more thorough explanation of functionality and code. Most notably, appendix G.1 outlines the general programming concepts, such as viewing, editing and deleting data. The work break-down structure in appendix F.12 shows activity planning for phase 1 implementation.

Server-side includes were utilised to import sections of code into pages where appropriate eg. navigation and title bar. Throughout the site, validation was used to ensure the quality and integrity of data submitted for entry to databases. A standard error message was created in case users encounter any problems when using the system. The following code in Application.cfm (a standard Coldfusion file referenced when loading every page) references the error page:

```
<!--catch all errors -->
<cferror type="exception" exception="any" template="error.cfm" mailto="admin@poultonetown.co.uk">
```

This enhances usability because rather than seeing a complex “worrying” error message, the user is presented with a “controlled” friendly warning. The displayed page explains that a problem has been encountered and that the systems administrator has been informed. A link allows them to return to the previous page and continue working. Meanwhile the system automatically collects information about the problem and emails it to the systems administrator, so it can be investigated and hopefully fixed

## **-Public Website**

Numerous static web-pages appear in the public part of the system to publicise club information. The ‘arrange friendly fixture’ page contains a form which when submitted converts its contents to an email and sends it to the appropriate manager, allowing direct targeted communications:

```
<cfmail from="admin@poultontown.co.uk" to="steve@poultontown.co.uk" subject="Friendly Proposal" server="194.150.252.51">
<p>
**Please DO NOT reply to this message, use the contact details provided**</p>
<p>#FORM.team_challenged# have been offered a friendly fixture with #FORM.club_name#.<br>
The proposed fixture details are:<br>
#FORM.team_challenged vs #FORM.club_name#<br>
Date: #FORM.proposed_date#<br>
KO Time: #FORM.proposed_ko_time#<br>
Location: #FORM.proposed_location#<br><br>
Notes/Comments: #FORM.comments#<br>
To follow up this request please contact: #FORM.contact_forename# #FORM.contact_surname# as soon as possible.<br>
Tel: #FORM.contact_tel#<br>
Email: #FORM.contact_email#<br>
Preferred Contact Time: #FORM.contact_time#<br><br>
Thankyou!
</p>
</cfmail>
```

## **-Role-Based Security**

The decision to utilise prototyping was validated through the direct suggestion of a system enhancement derived when experimenting with the technology during the prototyping phase. Coldfusion’s extensive built-in functions library (advantage of utilising a RAD technology) was discovered to offer an extremely capable security model. This offered the ability to extend the intended security provisions to implement a role-based model which would allow PTFC system administrators to more effectively control access. Rather than defining each user’s access rights individually, users are given a ‘role’, with each role having a pre-defined set of permitted rights. Implementation involved adding a further table (‘roles’) which created a 1:M relationship with ‘LoginD’ (see appendix G.4), where the functionality rights are stored. Security rights are defined throughout the system (using the ‘IsUserInRole’ function) and are then applied to the appropriate role in this table. If the user is not already logged in when trying to access a restricted page, the login form is automatically called before loading any page content. When a user logs in, their access rights (along with their username and password) are stored in a server-side cookie for use throughout the session (clicking the logout button activates the <cflogout> tag which deletes the cookie).

```
<!--if the user has not logged in -->
<cflogin>
<cfif IsDefined("FORM.username") is False
or IsDefined("FORM.password") is False>

<cfinclude template="log_in_page.cfm">
<cfabort>
</cfif>

<!--ensure username and password provided -->
<cfif FORM.username IS "" OR FORM.password IS "">

<!--Look up username and password in database -->
<cfquery name="loginquery" datasource="PTFC">
SELECT *
FROM LoginD, roles
WHERE Roles.PTFCrole=LoginD.PTFCrole
AND PTFCusername = "#FORM.username#"
AND PTFCpassword = "#FORM.password#"
</cfquery>

<!-- if details found in database -->
<cfif loginquery.RecordCount is 1 AND loginquery.active eq "yes">
<!--store user details -->
<cfloginuser name="#FORM.username#" password="#FORM.password#" roles="#loginquery.privileges#">

<!-- details incorrect or not found -->
<cfelse>

<!--show login form again -->
<cfinclude template="log_in_page.cfm">
-->
```

Whenever Coldfusion receives a page request, the stored rights are used to check what content should be made visible. If the user does not have the rights to see a piece of code/use functionality, the code is simple missed out. In the example below, “accountsAdmin” privilege is required to view the entire page. This concept is also used throughout the system to vary information displayed to users eg. content of the navigation bar. Appendix G provides a more thorough explanation of system’s security.

```
<!-- only authorised users can view this page -->
<cfinclude template="ForceUserLogin.cfm">

<!--checks privileges -->
<cfif IsUserInRole("accountsAdmin")>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">

<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Poulton Town FC - Members Area - Member Personal Details</title>
<link href="site style.css" rel="stylesheet" type="text/css" />
```

## **Systems Administration**

It had initially been defined in the requirements that systems administration would be responsible for maintaining accounts. However upon evaluation of this provision in the prototype (appendix B.6, review 10) PTFC decided that better functionality was required because the work-load required would be too great for a voluntary position. Consequently additional functionality was provided to allow users to view and update their own personal details, and obtain a new password automatically. A link from the login page provides access to a form. If all details are entered correctly, the system generates a random password and emails it to the user. Code to generate a random password was obtained from [http://www.kodefusion.com/ColdFusion\\_Scripts/index.cfm](http://www.kodefusion.com/ColdFusion_Scripts/index.cfm). Appendix G.5 highlights the specific details of the improved systems administration functionality.

## **Injury Diagnosis, Training Plans & Tactics/Tips**

These tools utilise a similar model to provide access to a database used for storing information. Detail of each tool’s functionality is provided in appendices G.6-G.9, while G.1 explains the general data querying/editing functionality utilised throughout the system. Search forms can initially be used to query the database and generate a results table of records which match the criteria. A link to ‘more information’ is provided which displays a page containing all the information about a particular tactic/training plan. Depending on access rights, additional links to edit/delete each record in the table are also included. The ‘create new’ button shows a blank data input form (unpopulated version of form used for ‘edit’), via which new records can be inserted into the database.

Upon evaluation of the prototype PTFC requested storage of additional ‘stretching’ advice and a better graphical input to encourage younger players to use the tool. A ‘clickable body image’ was therefore included as a data input method for specifying ‘body area’ to the query, as was a drop-down menu to choose ‘injury diagnosis’ or ‘stretching advice’ (supported by a new ‘stretches’ table). The ‘clickable image’ was implemented by defining hyperlink regions (see appendix G.7 for code).

### **-Fixtures/Match Reports**

When using this functionality, users must select to view ‘fixtures’ or ‘match reports’. This allows more focused search forms to be displayed eg. ‘team rating’ is not an appropriate search parameter for ‘fixtures’. Selecting ‘more information’ from the results table displays the entire report, with content varying in relation to the report type ie. a ‘match report’ contains more information (statistics) than a fixture. Managers can also store private information (eg. notes on player performances), which is only visible to themselves and senior staff members ie. it is not displayed in the standard match report.

When creating a report, the ‘location’ and ‘PTFC team’ are defined prior to viewing the data input form. This populates the ‘facilities’ and ‘oppositions’ dynamic drop-down menus (so only appropriate oppositions and facilities can be selected). The negative impact on usability of having to include a refresh button which re-populates the lists following changes is criticised in evaluation.

Oppositions are ‘tagged’ to PTFC teams through the use of the ‘player\_birth\_year’ field, which automatically re-calculates the correct team names each year (eg. Lancon Under 15s) and permanently binds them to the appropriate PTFC team. This avoids the need to update PTFC/opposition team names each season, and ensures the correct oppositions are made available to each PTFC team.

Player details for each match are stored in a separate ‘player\_match’ table with foreign keys used to link the records. This ensures data integrity in the M:M relationship between ‘match’ and ‘player’. The difficulty of trying to handle edits to multiple player\_match records at one time means the approach taken was to implement an edit interface which displays all player records, but only allows modification to one record at a time. When added into the report each player is given a squad number for that particular match. On the edit page this is used to identify which row in the table should be made editable. A fuller explanation of fixtures/match report functionality is included in appendix G.6.

### **-Notices**

Notices are stored as records in the notices database using similar add/edit/delete functionality provided for tactics/training plans. A key feature however is the ability to specify a ‘target audience’ for the notice. This controls which pages the notice appears on eg. website home page or members area. Queries to display notices simply retrieve records with the appropriate target audience value.

### **-Member Details**

Player/staff details are stored and publicised in a limited form, on the public website. It was decided that rather than creating a basic access page for managers to view all member details, this requirement would be merged with phase 2. A large amount of available time/resources meant it presented a more effective approach to integrate the functionality as part of the more advanced ‘member directory’, rather than risk duplicating functionality and likely leaving some obsolete (a wasteful approach to development). Consequently much of this functionality was implemented as part of phase 2, by providing managers with a ‘more detail’ link to view/edit all stored member information.

## **5. Further Development**

### **5.1 Phase 2: E-Community –Chat Forum**

Phase 2 involved developing the member's area into an 'e-community' by providing a chat forum

#### **5.1.1 Pre-Coded Forums**

It was initially intended that a free, 'pre-coded' solution would be used so as to increase functionality provision and speed up implementation. However, investigation of available pre-coded solutions revealed numerous problems. A professionally produced would require financial outlay, something which was condemned by the project team. Freely available packages were evaluated and found to nearly always contain poor quality coding or in some instances explicit mistakes. Coders making no guarantees as to forum reliability coupled with the inherent difficulty/hazard of attempting to interpret and modify third-party code, meant the decision was made to manually create a forum instead. This would also provide the added advantages of facilitating easier maintenance/system development and allowing easy integration with the existing security model/functionality.

#### **5.1.2 Design**

Chat forums (bulletin boards /newsgroups) provide areas for discussion/feedback. Metaphors used to describe forum elements can be taken literally. 'Rooms' are used to group 'discussions' relating to similar subjects. Each 'room' will contain numerous 'discussions' (individual conversations about something) which are in turn made up of many 'threads' (comments by an individual). Forums consist of data-entry/display forms supported by a database to store the content. [26] Viewing a room/discussion/thread essentially involves retrieving appropriate records from the database, while adding to the forum involves creating a new record. In order to provide an effective interface and automate display of appropriate records, hidden ids will be used to structure the content. A use-case diagram, page designs and a class diagram for the supporting database, are provided in appendix H.1. Normal members will only be permitted to add discussions and threads. The right to add rooms and delete rooms/discussions/threads will be restricted to systems administrators. This reflects the requests of the project team who wish to monitor the content of the forum specifically. A 'forum-active' field in LoginD will also facilitate 'banning' of members from the forum by removing their access rights.

#### **5.1.3 Implementation**

The main problem which had to be overcome when implementing the form was ensuring cascading deletion when discussions or rooms are deleted. While removing a thread simply involves removing a single record, deleting an entire discussion requires deletion of both the discussion record and all the associated threads. Deleting a room is consequently even more complex since all discussions and all threads must be looked-up and removed. The code below demonstrates how this was achieved. The

room\_id selected for deletion is used to find/remove corresponding discussions, which then allows removal of component threads:

```
<!-- get all discussions from within the room -->
<cfquery name="get_dic_id" datasource="PTFC">
SELECT discussion_id
FROM discussions
WHERE room_id = #URL.room_id#
</cfquery>

<!-- delete the room -->
<cfquery datasource="PTFC">
DELETE FROM rooms
WHERE room_id = #URL.room_id#
</cfquery>

<!-- delete all discussions from within the room -->
<cfquery datasource="PTFC">
DELETE FROM discussions
WHERE room_id = #URL.room_id#
</cfquery>

<!-- delete threads in the discussions looked up previously -->
<cfif get_dic_id.RecordCount gt 0>
<cfquery datasource="PTFC">
DELETE FROM threads
WHERE discussion_id = #get_dic_id.discussion_id#
</cfquery>
</cfif>
```

A similar problem occurs when adding a post/discussion, because the appropriate room/discussion id must be known so it can be stored in the new record to ‘file’ it correctly within the appropriate discussion/room. The required information is maintained on each page in the URL. Ids can consequently be referenced when either looking-up records to display the contents of a discussion /room, or when adding a new discussion/thread. A ‘discussion’ URL therefore reflects this format:

**[www.poultontown.co.uk/chat\\_forum\\_threads.cfm?room\\_id=3&discussion\\_id=4](http://www.poultontown.co.uk/chat_forum_threads.cfm?room_id=3&discussion_id=4)**

Ids are passed in URLs and hidden fields because they have no inherent value to the user. This approach therefore maintains the structure of the forum content, while providing a user-friendly click button interface. Additional useful information is also automatically transferred using hidden fields:

```
<cfoutput query="getname">
<input name="author" type="hidden" value="#GetAuthUser()#"/>
<input name="discussion_id" type="hidden" value="#URL.discussion_id#"/>
<input name="created_time" type="hidden" value="#DateFormat(CurrentMoment, "dd/MM/yyyy")# #TimeFormat(CurrentMoment, "hh:mm:ss")#/>
</cfoutput>
```

A thread record is created by the update page using the code shown below. The discussion is then automatically re-displayed with the new thread added. Adding a discussion works in a similar way.

```
<!--insert a new thread -->
<cfinsert datasource="PTFC" tablename="threads">

<!--add the contents of the thread to the database -->
<cfquery datasource="PTFC">
UPDATE discussions
SET last_post_id = "#author#", last_post_time = "#created_time#"
WHERE discussion_id = #URL.discussion_id#
</cfquery>

<!--link back to the forum -->
<cflocation url="chat_forum_threads.cfm?discussion_id=#URL.discussion_id#&room_id=#URL.room_id#">
```

Another difficulty revolved around displaying ‘last post’ information for each discussion and the number of topics/posts contained in each room. This was due to that fact that it involves retrieving information which cannot be easily referenced by the page displaying it. Due to normalisation, threads only maintain which discussion they are part of, meaning in order to count the number of threads, all discussions within the room would first need to be identified. The code below demonstrates how the information is looked-up. It also shows how links to rooms /discussions were implemented along with how Coldfusion restricts the ‘delete’ functionality to users who have the correct privileges.

```

<!--get number of discussions in the room using the room_id retrieved when displaying the rooms for selection -->
<cfquery name="get_discussions" datasource="PTFC">
SELECT discussions.discussion_id
FROM discussions
WHERE discussions.room_id = #room_id#
</cfquery>
<td width="10%">#get_discussions.RecordCount#</td>

<!-- if number of discussions is not 0 -->
<cfif get_discussions.RecordCount neq 0>
<!--count the number of threads in all the discussions retrieved by get_discussions-->
<cfquery name="get_threads" datasource="PTFC">
SELECT threads.thread_id
FROM threads
WHERE threads.discussion_id = #get_discussions.discussion_id#
</cfquery>
<td width="10%">#get_threads.RecordCount#</td>
<!--if no discussions then must be 0 posts so no need to look-up -->
<cfelse>
<td width="10%">>0</td>
</cfif>

<!--only allow deletion of rooms if the user has the rights to do so -->
<cfif IsUserInRole("forumModerate")>
<td width="20%"><em><a href="room_delete_confirm.cfm?room_id=#room_id#" title="delete this discussion and all associated threads">delete</a></em>
</td>
</cfif>

```

‘Last post’ information (username and date/time) is stored in the discussions table automatically when a new thread is added to the discussion. While data integrity may have been maintained better by retrieving threads and sorting them to locate the one with the last date/time, it was decided that from a performance perspective, this method was preferable. The compromise of data integrity is however criticised during evaluation. Chat forum functionality is explained in greater depth in appendix H.3.

## 5.2 Phase 3: E-Community -Member Directory & Communication

The chat forum is extremely useful at facilitating informal, social interaction. However, between them the members of ‘professional’ e-communities such as PTFC, hold a vast amount of specialist knowledge/expertise. A good ‘professional’ e-community should therefore assist members in identifying and exploiting their most valuable knowledge resource: *each other*. A directory will allow members to identify one another, while internal messaging will support subsequent communication.

### 5.2.1 Design

**Member Directory** -The member directory will effectively extend functionality provided on the public website for viewing player/staff profiles. The level of detail provided in the results will however be much higher and the search interface will be more powerful. When searching staff, a free-text box will allow querying of ‘qualifications’ and ‘experience’ via keywords, allowing members to locate specific expertise/knowledge sources. Information retrieved will be gained from ‘LoginD’ and if appropriate linked ‘player’ and ‘staff’ records. A summary of details will be displayed along with a link which allows the identified member to be contacted via the system’s communication facility.

**Communication** -It had initially been intended to provide communications functionality using web-forms, with content being converted to emails and sent to the targeted member’s email address (stored in LoginD). Outdated email addresses (of both recipients and senders) could however result in lost

communications, while irregular checking of specified inboxes may reduce effectiveness. Consequently it was decided to implement an internal PTFC messaging service, which should also encourage greater use of the system. Functionality required can be adapted from that used in notices., except the notices field-set will be modified appropriately. For example ‘attention\_of’ will become a ‘target’ member\_id, and ‘subject,’ ‘time\_sent’, and ‘sender\_id’ fields will be added. A boolean field called ‘old’ will also allow the inbox to highlight unread messages in bold. When a member accesses their ‘inbox’, records in the ‘member\_messages’ database which have their user\_id as the ‘target’ field, will be retrieved and displayed. To allow effective use, functionality will need to reflect that of email, with the ability to reply/forward messages and look-up user\_ids from the member directory. Page designs and a class diagram for the supporting database can be seen in appendix I.1.

### 5.2.2 Implementation

**Member Directory** - Initially users are able to select the type of staff member they wish to search for., with additional functionality then provided to refine the search. This is achieved using the Coldfusion tag: `<cfif condition> action if condition met <cfelse> action if condition not met </cfif>`. As the code below shows, the ‘keywords’ search field is only displayed when searching for ‘staff’ members ie. those members who’s records have free-text ‘qualifications’ and ‘experience’ fields.

```
<cfif FORM.PTFCrole eq "manager" OR FORM.PTFCrole eq "coach" OR FORM.PTFCrole eq "helper" OR FORM.PTFCrole eq "committee"
OR FORM.PTFCrole eq "committee">
<br /><br />Search Qualifications/Experience:
<cfoutput>
<input name="keywords" type="text" value="#FORM.keywords#" size="20" /></cfoutput>
</cfif>
```

Authorised users have the option to click a link to view all details stored about the selected member. This functionality is limited because the club do not want players to be able to view staff personal details. A ‘send internal message’ link automatically opens the user’s ‘write messages’ page and inputs the selected member’s user id (passed in the URL):

```
<!-- link to more information is restricted to those with appropriate access privileges -->
<cfif IsUserInRole("memberDetail")> <td width="15%"><a href=
"member_info.cfm?PTFCusername=#PTFCusername#&PTFCrole=#FORM.PTFCrole#&team_id=#FORM.team_id#" title="reveal more information">more detail</a></td>
</cfif>

<!--display link to send internal message -username is provided in the URL (along with a blank subject) -->
<td width="15%">
<a href="write_message.cfm?to_id=#PTFCusername#&subject=" title="send an internal message to this member">send internal message</a>
</td>
```

**Communication** -When the user logs-in and the member bar is displayed, their ‘user id’ (stored in the session cookie) is used to query the ‘messages’ table. The number of unread messages is counted and displayed on the landing page and the member bar. Opening the inbox retrieves all of the user’s messages, highlighting those which are unread in bold. This is achieved by changing the style of the ‘subject’ text if the boolean value ‘read’ is 0. If Coldfusion counts more than 10 messages in the inbox, then a message is displayed requesting that some be deleted. This is intended to reduce the amount of ‘useless historic data’ stored, however not including an automated deletion algorithm is criticised in evaluation.

Clicking on the subject allows the message to be read, at which point the boolean ‘read’ value is automatically updated. Reply and delete functions are provided, with information such as user id and subject being passed in URL as appropriate. When writing new messages, a link to the member directory is provided to allow target the member’s user id to be retrieved. Message content is largely transferred using forms, which pass information to the database for storage:

```
Content:<br />
<textarea name="content" rows="8" cols="100" wrap="soft"></textarea>
<!--hidden message detail fields -->
<cfcoutput query="getname">
<input name="from_id" type="hidden" value="#GetAuthUser()#"/>
<input name="from_forename" type="hidden" value="#forename#"/>
<input name="from_surname" type="hidden" value="#surname#"/>
</cfcoutput>
<cfcoutput>
<input name="time_sent" type="hidden" value="#DateFormat( CurrentMoment, "dd/MM/yyyy")# #TimeFormat( CurrentMoment, "hh:mm:ss")#"/>
</cfcoutput>
<input name="old" type="hidden" value="0"/>
<!--submit form button -->
<p><input type="submit" value="Send" /></p>
```

Appendix I.2 contains a fuller explanation of all phase 2 functionality.

## 5.3 Phase 4: Online Services

‘Web Services’ provide a standardised way of creating distributed applications by exploiting functionality provided by others. Not only does this facilitate better service provision but it also increases the speed of development. Weather and route planning functionality utilise this approach.

### 5.3.1 Design

**Weather Services** – [www.uk.weather.com](http://www.uk.weather.com) provide online weather information. It is possible to achieve automated forecasting for a particular area by supplying the postcode as part of the URL. Links will be provided from both match previews and from the public ‘facilities’ page, in order to meet the identified requirements. Coldfusion will automatically enter <<postcode>> into the URL, by retrieving its value from the appropriate database. For example, in match previews ‘ground\_id’ will be used to look up the postcode of the selected ground. An additional <<day>> variable can be supplied to request the forecast for a specific date. Coldfusion will perform calculations to determine the appropriate value (from 0 (today) to 7), producing weather information for forthcoming fixtures.

**Directions** –[www.uk.map24.com](http://www.uk.map24.com) will provide automated route-planning. The interface was evaluated as being much more user-friendly than alternatives (AA [34], RAC [35]), with the interactive interface providing clear, uncluttered displays and advanced functionality. Map24 also directly assist developers with integration by providing an online editor to generate Map24 HTML forms. These can then be copied into existing web-pages. This is advantageous because mutual interest means Map24 are likely to maintain the prescribed interface, avoiding future compatibility problems. Automated “click button” route-planning to/from facilities held on the system will be achieved by having Coldfusion populate forms automatically with appropriate information. A feature called ‘MailMap24’ will also enable a PTFC logo to be displayed hovering over the exact location of each facility.

**Events Calendar & Facilities Booking** – A free Coldfusion calendar from [www.perfectscripts.com](http://www.perfectscripts.com) will be used as the basis for both functions (implemented on separate calendars). The code will be modified to incorporate hyperlinks which allow selection of a specific date (passed in URL). This date will be used to automatically query the database and display any bookings/events in a table.

**Online User Feedback** – it was agreed that the feedback form created for use during testing/development, would be left on the system to meet the requirement for ‘online user feedback’.

### 5.3.2 Implementation

**Directions & Weather** – To obtain weather information it was necessary to split postcodes into two parts postcode\_a and postcode\_b because the ukweather.com service can only handle the first part of a postcode. For direction routing the two fields are simply combined on retrieval.

Map24 forms on the public ‘facilities’ page allow oppositions to simply enter an origin to get a route to the specified PTFC facility. The ‘get directions’ page in the members area allows destinations to be selected from a drop-down menu of all away grounds stored on the system. When selected, Coldfusion automatically retrieves the required postcode and inputs it into the form. The list is dynamic so if any additional away grounds are added, they are automatically included:

```
<!--retrieve all away grounds (including their postcodes) -->
Automated Routing:
<cfquery name="destinations" datasource="PTFC">
SELECT *
FROM away_pitch
</cfquery>

<!--form to allow selection of destination -->
<cfform name="route" action="member_directions.cfm">
<!--drop down menu -->
<select name="dest">
<!--blank initial value -->
<option value=""></option>
<!--output contents of query (all destinations) -->
<cfoutput query="destinations">
<!--provide details of each destination-postcode submitted as value but with ground name used for labels in the menu -->
<option value="#destinations.postcode#&#destinations.postcode#&#destinations.postcode#" ><cfif FORM.dest eq "#destinations.postcode#&#destinations.postcode#" > selected="selected" </cfif> #destinations.ground_name#</option>
</cfoutput>
</select>
<!--submit button -->
```

For match previews, when the match is marked as an ‘away’ fixture, the route planning facility is displayed with the selected away ground pre-entered as the destination. Because UKweather.com only provide day-specific reports up to 7 days in advance, weather for the actual match-day (and the preceding day) is only displayed when the fixture date is less than 7 days away:

```
<!-- if function so weather is only displayed if the match date is less than one week away and also in the future -->
<cfif #DateFormat(match_detail.match_date-7, "dd/mm/yyyy")# lte #DateFormat(now(), "dd/mm/yyyy")# AND #DateFormat(match_detail.match_date,
"dd/mm/yyyy")# gte #DateFormat(now(), "dd/mm/yyyy")#>

- match day weather: </td>
<!--displays links to weather information for match day and day before. -->
<cfif #DateFormat(match_detail.match_date, "dd/mm/yyyy")# eq #DateFormat(now(), "dd/mm/yyyy")# ><cfelse>
<td valign="top">

<!--day before match -->
- <a href="http://uk.weather.com/weather/detail/#postcode#?dayNum=#DayOfWeek(match_detail.match_date)" title="weather information from
uk.weather.com" target="_blank">Day Before Match: <small>(#DateFormat(match_detail.match_date-1, "dd/mm/yyyy")#)</small></a>
<!--if day before match is today display a label -->
<cfif #DateFormat(match_detail.match_date-1, "dd/mm/yyyy")# eq #DateFormat(now(), "dd/mm/yyyy")# ><em> (today) </em></cfif></td></tr></cfif>

<tr><td></td><td></td><td valign="top">

<!--weather for match day -->
<td valign="top">- <a href="http://uk.weather.com/weather/detail/#postcode#?dayNum=#DayOfWeek(match_detail.match_date)" title="weather information from
uk.weather.com" target="_blank">Match Day: <small>(#DateFormat(match_detail.match_date, "dd/mm/yyyy")#)</small></a>
<!--if match is today display a label -->
<cfif #DateFormat(match_detail.match_date, "dd/mm/yyyy")# eq #DateFormat(now(), "dd/mm/yyyy")# ><em> (today) </em></cfif></td></tr>
```

**Events Calendar-** The events calendar is displayed on the public part of the website. The pre-coded (never-ending) calendar used was modified to integrate events. When constructing the calendar for display, Coldfusion checks if an event is scheduled for each date. If it is, then the date in the calendar becomes a hyperlink. Clicking it re-loads the page providing the selected date within the URL. This is used to retrieve appropriate event details and display them in a table.

Dates passed in the URL are held in two formats; one for display on the calendar and one for storage in the database. This approach was necessary to overcome a problem identified during testing. The database stores dates in “mm/dd/yyyy” format, but UK convention means dates are represented on the calendar as “dd/mm/yyyy”. Initially events were therefore being saved and re-displayed incorrectly. So as to maintain usability and consistency, rather than alter the format of date display on the system, the date was simply held in both formats on the URL and referenced as appropriate:

```
<!--formats the dates for display and storage because database stores in mm/dd/yyyy, but UK convention is dd/mm/yyyy -->
<cfif URL.startmonth lt 10> <cfset startmonth = 0 & URL.startmonth><cfelse><cfset startmonth = URL.startmonth></cfif>
<cfset theday = X & '/' & startmonth & '/' & URL.startyear>

<!--get events for the selected date -->
<CFQUERY NAME="eventscalendar" datasource="PTFC">
SELECT *
FROM notices
WHERE event_date LIKE "#theday#"
AND event_type = yes
</CFQUERY>

<!-- if no events then just display date-->
<CFIF eventscalendar.recordcount LT 0>
<td width="10*" height="30" align="center" class="cal" /><CFOUTPUT>#X#</CFOUTPUT></td>
<CFELSE>
<td width="27" height="13" bgcolor="#999999" align="center">
<!-- if one event a hyperlink is provided that reloads the page displaying events with the specified date. information is provided on the
event when it is hovered over -->
<CFIF eventscalendar.recordcount gt 1><cfoutput>
<a href=
"eventscalendar.cfm?day=1&startmonth=#Month(dateob)#&startyear=#Year(dateob)#&event_date=#theday#" class="calbold" title="multiple events - click for more
details">#X#</a></cfoutput>
<cfelse>
<!-- if more than one event, a hyperlink is provided that reloads the page displaying events with the specified date. a generic message is
displayed when hovering -->
<CFOUTPUT query="eventscalendar"><a href="eventscalendar.cfm?day=1&startmonth=#Month(dateob)#&startyear=#Year(dateob)#&event_date=#theday#" class="calbold" title="#title# - click for more details">#X#</a></CFOUTPUT></td>
```

This line was added to the pre-coded calendar in order to fix a bug (identified problem with using 3<sup>rd</sup> party code) that prevented certain calendar months from being loaded, due to an invalid calculation.

```
<!--fixed the standard code here -this line was added to prevent days being negative when calculating new months -->
<cfif TOPAD lt 0> <cfset TOPAD=TOPAD+7></cfif>
```

**Facilities Booking-** Facilities booking operates in a similar way to the events calendar. However rather than having a dedicated page for events creation, selecting an appropriate date both displays current bookings and provides the option to make a booking. This approach was necessary because a lack of validation rules to prevent overlapping events means users need to check current bookings before making one of their own. When bookings have been made, they can only be cancelled or edited by either the creator or systems administrator. This prevents users from deleting someone else's booking. To allow this, the id of the user who made the booking is logged. Only if the current user's id matches that of the displayed booking, is the edit/delete option displayed:

```
<!--if the logged-in user's username matches that stored in the event booking or the user is a bookings administrator display edit -->
<cfif booked_by eq #GetAuthUser()# OR IsUserInRole("bookingsAdmin")>
<!--edit booking -link to edit page supplying booking date information as required -->
<a href=
"booking_edit.cfm?day=1&startmonth=#URL.startmonth#&startyear=#URL.startyear#&event_date=#URL.event_date#&booking_id=#booking_id#&store_date=#URL.store_dat
e#" title="book a facility"><em>edit booking</em></a></cfif> |
```

Thorough explanation of all phase 4 functionality is provided in appendix J.

## **6. Testing & Into Production**

### **6.1 Unit/Developer Testing**

The prototyping, modular approach taken to development meant that most errors/bugs were identified and fixed during coding and prior to prototype release. However, subsequent to implementation, additional formal testing was conducted so as to ensure coding accuracy and provision of all intended functionality. Appendix K.1 contains a copy of the unit testing report. The low number of identified errors at this stage is reflective of the approach taken and can be cited as evidence of high-quality.

### **6.2 User Acceptance Testing**

In addition to unit testing, user acceptance testing was also conducted so as to ensure the system is as required by PTFC. This is important because a technically effective system which does not meet user requirements would still represent a type of project failure. End-user testing also populates the system with ‘real’ data and tests its performance within the environment it will need to actually operate. The PTFC project team indicated that they wished to take responsibility for conducting their own programme of formal acceptance testing (getting members to use the system and feedback directly to them). Once this was complete, feedback was consolidated by the project team into a prioritised list of change requests. This approach was adopted in recognition of the limited resources available for fixing problems/implementing project enhancements before the fixed deadline. Focusing attention on critical alterations first, enhances the likelihood of overall success. Appendix K.2 contains user acceptance testing report extracts, while prototype evaluation forms are supplied in appendix B.6.

In order to collect direct feedback from users during prototyping and testing, a feedback form was provided on the system. This approach allowed collection of both qualitative (comments) and quantitative data (numerical judgements), structuring it into a database for analysis, during evaluation.

### **6.3 Into Production**

An account was set up with host-it.co.uk, and all files uploaded to the server using FTP. The database was converted from MS Access into MS SQL using the functionality provided as part of MS Access 2003. When the system first ‘went live’, initially all database queries failed to run correctly, despite working perfectly on the test server. Investigation revealed a syntax error, caused by differences in versions of Coldfusion used by Host-it and myself. To rectify the problem, all double inverted commas ( “ ) in SQL queries were replaced by single ones ( ‘ ) and the data-type “integer” was changed to “numeric” whenever it was used. The system ran perfectly after these initially somewhat puzzling problems had been solved. PTFC subsequently decided they wished to operate the domain name [www.poultontown.co.uk](http://www.poultontown.co.uk). This was purchased from [www.telivo.com](http://www.telivo.com), who were identified as the cheapest vendor. E-mail forwarding was also set up to provide “[@poultontown.co.uk](mailto:@poultontown.co.uk)” email addresses for staff. Screen captures showing how this was achieved are available in appendix K.

## **7. Evaluation**

### **7.1 Evaluation Criteria**

So as to provide thorough coverage, criteria used for evaluation are based upon concepts judged most fundamental to this project. The identified criteria not only provides valuable feedback to the developer on possible future improvements to the process, but also informs PTFC what was achieved and what problems may potentially be encountered. Cornford and Smithson (1006) [2] highlight the importance of assessing both the work itself and the utilised methods.

In order to evaluate the level of overall success it is necessary to assess whether the original aims/objectives and minimum requirements were met. This is important because producing a technically excellent system which does not solve the identified problem, cannot justify complete success. The technical nature of the solution does however make it necessary to also evaluate the delivered system in greater depth. Primarily this involves assessment of whether all minimum requirements were achieved (factors identified at the outset as vital to success). In order to judge the overall extent of success, a more in-depth review of all user requirements follows, along with identification of any project enhancements which improve the quality/scope of the solution. A consideration of the chosen approach/technology is included to evaluate whether a different solution would have been more appropriate. This also involves comparison against other systems. The people-based nature of this project makes user feedback and overall system acceptability a fundamental indicator of success. Investigation of these factors is followed by consideration of the change management programme and the effectiveness of the adopted methodology. Prior to conclusion, criticisms of the system and possible future enhancements are profiled so as to indicate what limitations exist and what future development could be most effective.

### **7.2 Aims, Objectives & Minimum Requirements**

If it can be demonstrated that original expectations (chapter 1) were met, then project success can be more easily justified. All five of the defined objectives were achieved. Extensive research and analysis (documented throughout this report) allowed accurate understanding of the problem, which was then translated into a set of clear requirements and an appropriate design. These claims are validated by the positive feedback provided during review, at the end of said phases (appendix C.5, meeting 11), and following user acceptance testing. Research also ensured selection and implementation of both an appropriate project methodology (see section 7.9) and technologies (see section 7.5). The large amount of prototype, unit and user acceptance testing ensured high-quality.

It can be further justified that all four minimum requirements were met (see chapter 4), meaning “an acceptable solution to the problem” was delivered. By the end of the project, the system was live on the WWW ([www.poultontown.co.uk](http://www.poultontown.co.uk)). The external website displays club information to the public, while the secured member’s area allows storage of private club information (accessible to members

via an effective security model). The remotely accessible information system it contains, also allows storage and utilisation of information as defined during requirements planning (chapter 3).

Softer consideration of achievements relating to the overall project aim is important in evaluating ‘solution of the identified problem’. There seems little doubt that the new system, where deployed, has provided a fundamental improvement on the old methods. Poor communication and information/knowledge sharing were mainly hindered by the lack of physical contact between club members. The new e-community, supported by a well-designed information system, now allows for member interaction in both a structured and un-structured manner, despite continued lack of physical contact (although trials suggest increased communication has also indirectly resulted in increased physical interaction). The system therefore appears to have initiated the desired beneficial, cultural change within PTFC. Staff noted that the system has encouraged “closer bonding” between players using the forum, while also “increasing the number of queries” presented to staff for “tips/ advice”.

Unfortunately the system has only recently ‘gone live’, with the club choosing to delay unveiling to all members until presentation evening. Consequently quantifiable data to validate the claim of improvement to “current paper-based processes” and “information/knowledge sharing & communication between all members”, is limited. However testing and trials with selected club members and one age-group (team) suggests these aims will be met. The system has received strong support from most club members (aided by the implemented change management programme –see section 7.8), and usage by selected members has been high. The key aim identified by knowledge mapping (section 3.1.5), to store current tacit knowledge also appears to be coming into fruition. Parts of the system have already been populated with large amounts of data, while the chat room and internal messaging service have seen considerable use. Therefore while it cannot be explicitly proven, there seems little doubt that the system offers potential to solve the PTFC problem effectively.

### **7.3 User Requirements & Enhancements/Quality Improvements**

#### **User Requirements**

Requirements defined during information analysis (chapter 4) revealed exactly what PTFC expected from the system. Evaluation against these specific requirements can therefore be used to help gauge both technical success and fulfilment of user expectations. The summary document used during the ‘assessor demonstration meeting’ profiles in detail which/how specific requirements were implemented (see appendix L.1). It reveals that by progressing to phase 4 and including priority 3 requirements, the project was able to exceed functionality expectations. While some features were specifically identified as project enhancements at the outset (online services, facilities booking, e-community), many revealed themselves in the form of emergent requirements during prototyping. For example the system now allows auto-password resets, modification to member personal details and

storage of ‘stretching advice’. The ability to include such additional requirements and meet the deadline can be cited as an indicator of success and effective methodology/project management.

### **Quality**

In addition to increases in functionality provision, product quality was also increased considerably beyond original requirements. A roll-based security model now protects the member’s area, allowing far easier security control. Internal messaging was also utilised instead of a form-to-email approach, so as to increase reliability of communications and encourage greater use of the system. Further examples can be sited in the graphical input for injury diagnosis and the generation of a user-friendly interface which largely meets ‘Neilson’s best-practices for usability’. Other achievements from the list of possible project enhancements include implementation of extensive end-user acceptance & prototype testing, as well as control of an effective change management programme in partnership with PTFC. Although no formal user-manuals were created (research/analysis identified numerous problems with doing so, while system usability was aimed at being intuitive), considerable documentation was provided to PTFC in order to help them support the system. This was primarily motivated by the requirement to ensure easy future update/development of the system. Not only were the club provided with an entire copy of this report, but chapters 4-6 and appendices G-J were also summarised into a single document to act as a ‘systems administrator manual’ (this is not included in full because of duplication, but an extract is included in appendix L.2). Supplemented by the inclusion of extensive ‘commenting’ throughout the ‘system code’, this should provide a more than adequate support for a “future developer with reasonable technical ability”. Consequently it can be justified that not only has the project exceeded requirements in terms of functionality provision and technical quality, but numerous identified ‘enhancements’ have also been achieved.

## **7.4 The Approach Taken And The Technology Used**

The approach taken to implement a web-based system was justified early in the project (section 2.5.2). It was decided that the richness of the medium and PTFC’s strong desire to implement an online solution, provided comprehensive reasoning. This appears to have been proven true by the extensive functionality offered for storing information, and the high levels of user acceptability indicated. The decision to utilise Coldfusion technology coupled with MS Access/MS SQL server was also grounded on solid research. These choices have been largely vindicated. Having never used server-side languages before, the proposition was rather daunting, however the extensive documentation and tag-based nature of the language made it pleasurable to use. Further more its intuitive operation and extremely powerful build-in functionality meant it was possible to implement most requirements relatively easily. A particularly advantageous feature of Coldfusion was its relatively complex roll-based security model, used to protect the member’s area. Modifying page content depending on user access rights or pre-defined ‘if’ statements, also allowed complex dynamic pages to be created by coding single, well-constructed pages. Coldfusion’s handling of database

interaction (input, edit and delete) also proved fundamental in providing the remotely accessible information/knowledge resource. The server-side technology choice is therefore difficult to criticise. Using MS Access during prototyping as a RAD tool allowed quick development of a working system, sufficient for functionality evaluation. Tables could be defined quickly, while the in-built SQL query generator also assisted with SQL statement construction. The conversion to production-standard MS SQL Server was also relatively quick and pain-free. The only criticism that can be levied at the choice of technology is not upsizing the MS Access database to MySQL. Hosting fees for MySQL are lower, meaning cost savings could have been introduced. Knowledge of the ability to upsize to MySQL was however not discovered until after implementation completion. This is clearly a weakness in research and should have been identified earlier. However, in defence of the chosen approach, all free MySQL upsizing wizards are not accompanied by quality guarantees from their creators. Alternative commercial products would have necessitated a substantial financial investment, dramatically increasing the risk of project failure (section 3.2.6). The MS SQL upsizer on the other hand is an integrated part of MS Access and therefore can be considered far a more reliable approach.

Using Macromedia Dreamweaver and Coldfusion server as development tools proved extremely beneficial. Syntax errors were highlighted immediately during coding, while the local server allowed testing of pages without the need to make them ‘live’. This undoubtedly speeded up development, facilitating simultaneous coding and testing, and reducing the length and cost of the hosting contract.

## **7.5 Comparison Against Other Solutions**

Background research identified no existing solutions which matched the exact needs of PTFC, and research during evaluation confirms this is still the case. This implies the potential for competitive advantage looks set to be achieved, justifying the project’s existence. The inherent difficulty of introducing such strategic systems into organisations [36] is an indicator of particular success.

Functionality provided by the football operations support systems analysed during research, is largely reflected in the match reports/player statistics parts of the information system. Players can be added into the match report from a pre-defined squad list, while it is possible to enter match statistics and review them at a later stage. The PTFC e-community can also be seen to draw lessons from sportnetwork.net in terms of its layout and content, while the chat forum was heavily modelled on corsasport.co.uk. Although some alternatives may offer slightly superior functionality (eg. better player performance analysing), the key advantage of the new dedicated PTFC system is the fact that not only is information tailored to each member and made available in one place, but the information is also kept private from anyone outside the club. This maintains the vital competitive advantage, while the fact that the system is targeted specifically to the requirements of PTFC allows better integration into working practices. Future development should however look to increase functionality to match/exceed that of other solutions because the deficit currently represents a slight disadvantage.

## **7.6 User Feedback/Evaluation & Acceptance Testing**

Implementing user acceptance testing throughout the project to evaluate prototypes proved extremely effective because it enabled incremental modification to the system in order to maintain alignment with current requirements. Consequently by the end of the project, it was relatively certain that favourable feedback would be provided. This is indeed reflected in the PTFC Committee's feedback letter (appendix L.3). It highlights perceived success of the project and identifies numerous ways in which the stated problem has been attended to and largely solved by the system where it has been deployed. In order to measure achievement against strategic aims (section 3.1.3) re-evaluation after long-term usage would be necessary, but early indications are extremely positive.

The feedback report provided by the PTFC project team following completion of the development phase (appendix K.2) reveals that most changes requested by trial users were for aesthetic purposes. This suggests PTFC members were relatively happy with the implemented functionality. Extracts of user feedback provided to the team (appendix L.5) help qualify this claim further.

The 'direct feedback' facility (form) unfortunately received fewer responses than expected. However, the overall positive nature the limited feedback, means a lack of responses could in itself be cited as an indication of satisfaction, if not at least avoidance of dissatisfaction. This conclusion is based upon general human tendency to publicise dissatisfaction much more openly than satisfaction.

Responses that were gained indicate functionality provision is perceived as 'good', as is the overall appearance of the site. Most users indicated that they would be likely to use the system at weekends, and particularly before/after matches, validating the assumption of peak-usage periods and therefore the choice of database technology. The features which will receive most usage are suggested to be the chat room and match previews/reports. This reflects the core operations of the club and is therefore not unexpected. Consequently the decision to make them high priority requirements is validated, meaning the focus of the system was correct. Staff members can also be noted to place particular emphasis on their usage of the tactics/training plans and facilities booking features. This highlights the value of the information system and indicated PTFC were correct to instigate the project.

## **7.7 System Acceptability**

When evaluating, Nielsen (2000) [14] suggests that the most commonly used indicator 'usability', is in fact only a sub-category of overall, 'system acceptability'. Therefore, while usability may be the fundamental contributor to user 'perception', other factors should also be evaluated:

### **Social Acceptability**

There seems little doubt that the system has been well-embraced by those involved with the project. Contribution at JAD sessions was excellent, while the project team reported excessive numbers of members volunteering to help with testing. The Committee also reveal considerable satisfaction in their letter (appendix L.3). As project owners their judgement is particularly significant.

## **Cost**

Cost was identified during objectives balancing (section 1.2) as a key constraint. Design decisions often took cost into account. Using open-source calendar code, implementing a chat forum manually and using free graphics/icons meant no explicit expenditure in creating the system. Effective research of hosting companies also allowed a 50% discount, meaning overall project costs were negligible.

## **Compatibility/Reliability**

Compatibility was a relatively small problem since the hosting company was selected intentionally to support the implementation, while users require only a web-browser & Internet connection. Compatibility with current working practices was addressed through small-scale Business Process Reengineering with the Committee, essentially involving minor adjustments to contracted roles/responsibilities. Although highlighted during risk analysis as a potential source of resistance, high dedication/motivation of staff meant the system was easily integrated into use.

Although reliability of the system cannot be properly evaluated until the system has been fully deployed to all members, current usage by all staff and one team, has revealed no problems. The choices of technology are likely to have proved fundamental because the discovery that MS Access can only support 10 simultaneous users would have caused considerable problems.

## **Usability**

Where possible, during analysis/design both qualitative and quantitative measures were identified so as to define clear expectations. For example, when defining appearance, the qualitative requirement for “a professional overall appearance” was supported by the quantitative statement “a black and orange colour scheme”. On the whole however, PTFC made few explicit usability requests. The desired colour scheme was implemented, supported by additional usability/appearance principles identified in research. On the feedback form, most users rated appearance as at least average (scoring 3/5), with one user commenting “looks good and very professional”. Features such as the date-stamp on the standardised title-bar and displaying the user’s name were intended to actively encourage this perception. Using Coldfusion to modify the content of the menus so users only have access to permitted functionality increases usability through generation of fewer error messages. This was noted during prototype evaluation as being a particularly “impressive feature”. The standardised error message and auto-notification to systems administration should also help deal with and eradicate any system errors, an example of where research indicated functionality which the users didn’t know they needed. Consciously following Neilson’s principles permits the assumption that an effective, user-friendly interface has indeed been created. Principles are reflected through a consistent appearance across all pages (by using a template) and error/ ‘action confirmation’ messages. Supplementing with Darlington’s recommendations ensured thorough consideration of multiple sources.

## **Ease Of Learning And Use**

Booth (1989) [37] notes that support should be provided for both novice and expert users (noted as particularly important for this system). This was attempted during database searching in particular.

Forms support searching via numerous parameters but also allow experts to input the id of a specific record. Feedback results suggested no obvious differentiation in usability scores with most users rating it as above average (4/5). A potential criticism can however be made regarding inability to personalise the interface or link to well-used pages. The ‘recent searches’ list is also lost when a user logs out. Client-side cookies may have been able to overcome this problem and improve usability.

### **Content**

Further results from the feedback form revealed most users liked the content of the system, believing numerous features to be particularly useful. Prototype evaluation and subsequent testing proved effective at removing errors so that they are now extremely rare (no error reports received during the last week of trial deployment). Evidence therefore appears to suggest that attitudes towards the system been generally very positive, implicating a high level of system acceptability.

## **7.8 Change Management**

The ten change management principles (section 2.6) were consciously followed throughout. Specific details of how each principle was addressed and integrated into the methodology, can be found in appendix L.4. The main concepts however focused around ensuring continual user-involvement from both the project team and other key stakeholders. This was achieved mainly by arranging regular ‘project meetings/involvement sessions’ and maintaining communication with the project team.. The other key concept involved adequate consideration of the organisational/human issues, achieved through extensive organisation analysis. Strong support for the system felt throughout the project and the so-far seamless introduction and rapid uptake by members, indicates great success in this area.

## **7.9 Effectiveness Of The Methodology**

Overall, the implemented methodology proved extremely appropriate. Adopting WISDM as the framework meant the methodology was directly targeted at development of a web-based information system, imposing consideration of key issues such as page layout and site structure during HCI design. Recommended development phases/techniques also encouraged a well-rounded evaluation of both technical and people-based issues, something particularly relevant to the problem. Inadequate consideration of either would almost definitely have reduced success. The tool-box format also allowed utilisation only of tools/techniques which added particular value to the project, something especially relevant given the time limitations. The methodology was therefore accurately aligned to the exact needs of the project, in many instances prompting coverage of issues which although fundamental, would have otherwise been missed.

The JAD sessions proved an extremely effective method of collecting requirements They allowed exploration of issues with a range of stakeholders, followed by a targeted refinement into precise requirements by those with overall project control. This permitted large-scale participation, but also ensured quick definition of accurate requirements. The additional information gathering techniques

were also vital however. Observation, document analysis and interviews were important in identifying a range of issues not explicitly covered by the JAD sessions, justifying multiple design decisions. The only criticism derives from failure to provide WAP accessibility, probably caused by JAD sessions encouraging focus on web-based functionality developments rather than overall enhancements.

The contribution of prototyping can not be underestimated and may indeed have proved the most important feature of the methodology. Linear coverage of the issues highlighted by WISDM would have been unlikely to produce the sane robust, ‘well accepted’ system. Prototyping proved fundamental in identifying system errors and was also responsible for modification/enhancement of requirements on numerous occasions. Further more, prototyping also identified differences in interpretation by the developer and end-users. The chosen methodology was therefore able to make up for weaknesses in both requirements gathering and traditional development approaches.

Using a dedicated PTFC project team not only reduced the time/resource demands of testing but also allowed more honest/accurate feedback away from the developer. Having problems/change requests prioritised, increased efficiency of resources and helped ensure alignment with requirements. This approach is therefore identified as the fundamental reason for why such extensive functionality provision was possible. A criticism could be derived from the fact that testing was limited to ‘unit’ and ‘user acceptance’. Although this represents an extension to minimum requirements, more additional ‘sustained usage’ or ‘high-load’ testing would have been advantageous. Unfortunately time limitations made it unrealistic. It was intended to validate XHTML code using the W3C tool (<http://validator.w3.org>), but interlaced Coldfusion code disrupted results. Therefore, although malformed code has not so far resulted in any problems, future occurrences cannot be ruled-out.

Additional criticism can be directed at the WISDM methodology as a framework because it doesn’t explicitly support the testing phase, causing it to be largely overlooked during planning/scheduling. Fortunately this project’s focus on ensuring both pre-release developer testing and prototype reviews, meant most errors had been fixed prior to formal testing. The ‘non-critical’ nature of the system also means the impact of problems is largely limited to inconvenience. The automated error message generation functionality should assist in problem eradication, demonstrating how a quality approach to development has made-up for a methodology weakness and also created a more sustainable system.

## 7.10 Criticisms & Possible Improvements/Extensions

Despite great success, criticisms can still be made of the implemented system:

### Database Design

In addition to using MS SQL rather than My SQL, reflection leads to criticism of the database design used for storing home and away facilities. Rather than using separate tables, these should have been integrated seen as they store almost identical information. This would have allowed both home and away facilities to be displayed for selection in match reports, without the need for an ‘update’ button. Usability could have then been increased by deriving ‘home/away location’ from ‘facility’ rather than

visa versa. Alternatively client-side technology could have automatically re-populated the lists, improving performance by reducing the number of server page requests. JavaScript could similarly have been used on menus to reduce visual clutter, providing dynamic menu options as required.

A further criticism of database design, relating to data integrity, can be noted in the chat forum. Although functionality is not affected, storing ‘last post’ information in the discussions table rather than calculating it dynamically from threads, could create inconsistency, so must be criticised. It may also have been beneficial to include storage of individual ‘drills’, for inclusion in ‘training plans’. This would increase detail and consistency of drill descriptions across all plans.

### **Usability**

Free-text searching currently compares inputted strings directly against database contents. Not removing ‘no value’ words such as “it”/”and”, reduces effectiveness because irrelevant results will often be returned. The current interface also makes pages difficult to print on single A4 sheets. Usability could have been dramatically improved by providing separate printable pages for example. The messaging service is limited by its ability to only send internal messages. Communicating with non-club members could have been greatly enhanced by allowing messages to be converted to emails. This can however be noted as a potential system extension because Coldfusion does support such functionality. The basic nature of internal messaging also means no algorithms exist to delete old messages, which may result in large volumes of redundant information being stored. Usability is also degraded by the fact information needed to create a ‘reply’ is transferred in the URL. Consequently message history cannot be included. Using forms would have therefore represented a better approach. Another problem is the lack of functionality to prevent facility bookings ‘overlapping’. Creating validation rules for open-ended bookings was complex and time ran out to attempt implementation. Despite this criticism however the club noted that simply having the ability log a booking represents a dramatic improvement. ‘Business rules’ were used to overcome the shortfall in functionality, with only the first booking being valid. The system sorts all bookings into descending order to assist this.

### **Security**

The importance of system security means although databases are held in secure folders, the password file (LoginID) does implement hashing to secure passwords. Consequently, if the database was somehow obtained, all passwords would be readable. Lack of encryption is another potential weakness, however the scope and limited resources available for this project, coupled with the low potential threat (section 3.2.6) means current security provisions can be considered adequate.

### **Performance**

Implementation of some aspects of the system could be suggested to cause performance degradation. For example, every time a page is loaded, the number of unread messages is calculated for display on the menu bar. This requires checking of every record in a file which could potentially become very large. While altering users to new messages immediately is beneficial, performance problems could be avoided by simply removing the ‘unread messages’ indicator. PTFC have been made aware of this.

## **Development/Expansion**

Future development efforts should attempt to address some of these shortfalls since they will increase the effectiveness of the current solution which is proven to be effectively aligned with planned strategic development. If functionality expansion is desired, this should involve providing WAP access to features such as training plans, facilities bookings and notices, for times when users can't access a PC. This would require re-coding using WML mark-up, but it is supported by the current hosting company. Web forms could also be used to implement club administration functionality, handling expenses with auto-creation of receipts and account logging. Linking this to a payment handling service would also allow online donations and selling of merchandise/events tickets. Increased revenue would undoubtedly assist in development. PTFC have already initiated a scheme with a local secondary-school to integrate system development as part of their ICT course.

## **7.11 Summary/Conclusion**

While the evaluation appears to suggest almost total success, it is important to rule out all potential types of failure before concluding this to be the case. Lyytinen and Hirschheim (1987) [38] define several different forms of project failure. It is clear that process failure (no workable solution/over-budget) has been avoided. Costs were negligible and minimum requirements were exceeded in terms of functionality and quality. Correspondence failure implies not meeting objectives, however the prototyping ensured design/implementation was constantly re-aligned to requirements. Section 7.7 indicated that poor levels of satisfaction/acceptance were not experienced (interaction failure), with feedback also revealing no instances of stakeholder group expectation failure.

Having ruled out these types of failure, it is therefore reasonable to conclude that overall the project has experienced considerable success. Functionality provided in the final system far exceeded that originally expected. The system was also designed in a manner which took into account the vital human-issues that under-ran the problem, producing a solution which was specifically targeted as solving the fundamental problems of member interaction and knowledge sharing/retention. Placing considerable emphasis on usability issues means the system is both intuitive and easy to use. High acceptability was ensured through the effective change management programme which maintained user involvement throughout. Future development should also be aided by the technology selection, supporting documentation and comments integrated throughout system code. The improved systems administration functionality should also ensure continued operation with minimal support. This is extremely advantageous given the voluntary nature of the systems administrator role.

It is however important the note identified limitations because the system is not without fault. Lack of WAP access provision is a notable omission, as is the ability to send external mail. These are however relatively minor criticisms. Consequently, while only time will tell if the system can successfully foster development/interaction, initial indications suggest this is more than likely. Therefore on both a technical and human level, the project can be evaluated as achieving considerable success.

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## **Appendix A –Reflection**

Upon reflection, despite being hard work and at times extremely frustrating, this project has been thoroughly enjoyable. The opportunity to deal with a real organisation and put what I have learned into practice was extremely satisfying. I feel that as a result of dealing with PTFC members, my interpersonal skills have developed considerably and I am now much more prepared to embark upon a career in IT consulting. My close contact with the PTFC project team has lead to the formation of some strong relationships. As a result I have offered my services to the club for working on the system beyond the project completion date. Success experienced has even lead to one member recommending me to a work colleague who has requested assistance developing another website.

Although the project was evaluated as an undoubted success, it is my personal belief that had it been under-taken by a professional developer, it may not have achieved the same outcome. The amount of time invested would have resulted in astronomical costs, making alternative solutions preferable.

The contribution of the WISDM methodology I believe was fundamental in achieving success. Ensuring consideration of organisational and technical issues produced a solution which was accurately aligned to the needs of PTFC. This resulted in high levels of user acceptance rather than simply technical success. The decision to use prototyping and a phased development approach also proved to be a correct decision. By involving users in continual evaluation and testing, user requirements were able to be constantly modified so that by the time the system was delivered, it matched exactly the needs of the club. Further more, extensive exposure to user activity also helped remove any errors/bugs from the system, meaning an already robust and stable system was submitted for formal testing, making this phase extremely efficient. One negative point however is that the phased development made it difficult to generate the report effectively under the prescribed headings and the extensive functionality delivered was hard to consolidate into the page limit.

The schedule changed considerably throughout the project, usually because of underestimating the time taken to complete certain activities and changes to requirements. The 70:50 split of modules meant I spend considerably more time on the project during the second semester. While this proved beneficial in allowing focus during a sustained period, it also added unnecessary pressure.

Over-ambition in terms of functionality, whilst achieved, resulted in a rushed construction of the project report. From a final year project perspective it would probably have been better to have focused upon a smaller set of requirements and left more time for report writing. Additionally, developing the quality and effectiveness of a smaller range of functionality may also have resulted in a more professional final product. While the system received considerable praise for its professionalism from the end-users, in my opinion it still has a slightly ‘amateur-ish appearance’.

Despite this however I am very pleased to have been able to help PTFC solve what appears to have been a fundamental problem. I am particularly proud to have worked with PTFC staff, whose self-less dedication to assisting development of younger players is humbling.

From the lessons learnt during the project, I have constructed a 10-point plan which should help future students increase the likelihood of achieving final-year project success:

- 1) **Pick your target project carefully.** Don't attempt to devise a solution and then find a project to match because it may not be the most appropriate solution and this will quickly become evident.
- 2) **Plan the project schedule carefully.** Start the project early and build-in flexibility to avoid unnecessary pressures and allow for inevitable delays. Include time to understand selected methodologies/ technologies. Learning how to use them effectively takes some time!
- 3) **Ensure user involvement throughout** and implement an effective change management programme to solve the problem, not just deliver a system. Maintaining the relationship helps increase acceptance, while involving users in prototype evaluation helps continually update requirements.
- 4) **Focus on solving the ‘problem’** rather than trying to develop the most technically advanced system possible. If developments are undertaken, consider all project enhancements, not just functionality.
- 5) **Define a dedicated support team within the target organisation** you can interface with to increase efficiency. Allowing users to take control of their own testing also increases the likelihood of acceptability because users will have more confidence in a system they have tested themselves.
- 6) **Ensure appropriate analysis/design prior to implementing.** Although this may prove frustrating, it will dramatically increase the likelihood of project success.
- 7) **Don’t be afraid to use third-party code** as part of your solution if it represents the most effective approach. Provided it is not excessive, this can form part of a rapid applications development approach.
- 8) **Meet all deadlines for draft chapters and demonstrations because the feedback will be useful.** Aim to complete implementation prior to the assessor meeting. This is a good opportunity to form a good impression of the system in the assessors mind.
- 9) **Don’t underestimate the time taken to make a system live** after you have finished implementing. Testing takes time and numerous problems may need to be overcome.
- 10) **Give the report the respect it deserves.** Consolidating an entire year’s work into 50 pages is difficult and takes some time. Be concise in explanations and focus upon achievements and problems overcome. Do not include in the report what is better referenced, and select research topics critically.

## **Appendix B –Introduction**

### **1. Company Background**

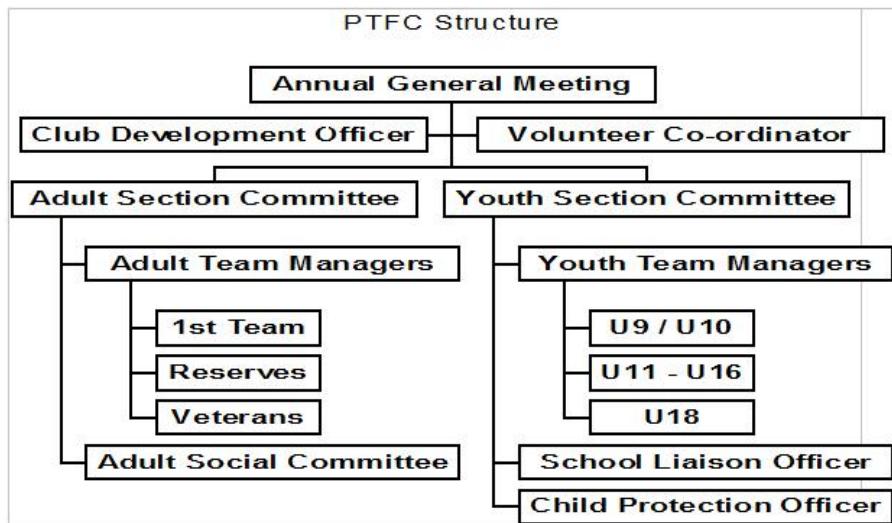
Since its formation, as a result of expansion and amalgamations with numerous other teams, the club has grown considerably in size and stature. The most notable development happened in 2003, with the acquisition of youth teams formally playing under the name of Poulton St. John's FC. Today the club operates 15 teams:

- Men's Adult 1<sup>st</sup> Team;
- Men's Adult Reserve Team;
- Men's Adult Veteran's Team;
- 2 x Under 9 teams play friendly games only;
- 2 x Under 10 teams play in the Poulton Primary League;
- Girls played in Lancashire Girls League before being temporarily re-organised to training only;
- 6 x junior teams (Under-11 to Under-16) play in Central Lancashire Junior Football League;
- Under 18's play in the Lancashire Evening Post Youth League;

In 2003 the club became a 'Charter Standard Development Club'. This status was awarded partly upon recognition of the club's extensive 'Development Plan'. Key inclusions in this plan were;

- Increase Player Recruitment & Form New Teams –and target specific groups
- Develop A 'Mini Soccer Centre' for Under 7/8 ages
- Link With Schools to provide extra-curricular coaching
- Recruit, Retain, Support and Reward Club Volunteers
- Increase Standard Of Club Facilities
- Implement Performance Monitoring and Evaluation Of The Club Against The Development Plan

The junior section of the club is a voluntary organisation, affiliated with the Lancashire FA and has over 250 players across 10 age groups. It aims to provide an introduction to football for boys and girls, improve their football skills and, allow them to play in competitive youth football matches; encouraging sportsmanship, discipline and general fitness, as well as development of wider social skills (team working, communication and commitment). The adult section involves both paid and voluntary staff to run the 3 teams, however has similar structure/objectives. The club committee takes responsibility for administration. Funding is obtained via membership fees, club fund raising events/initiatives, and Council/FA contributions. The club has 2 dedicated facilities, Cottam Hall and The Wyre Civic Centre, both with changing rooms and numerous pitches.



### **Committee Members**

- President
- Chair
- Vice-Chair
- General Secretary
- Honorary Secretary
- Treasurer
- Youth Committee Representatives

## **2. Project Scheduling Tools**

The major alternative to using Gantt Charts in project management is the PERT chart. The level of detail provided by a Gantt Chart is less than in a PERT chart, since the sequencing and inter-relationship of activities is not detailed. This limits the diagram's ability to show the effects of activity acceleration/delay, or changes to start/completion dates. Further to this, activity uncertainty is also difficult to represent, meaning the minimum and maximum duration of activities (and consequently the project), is difficult to ascertain from the chart.<sup>1</sup>

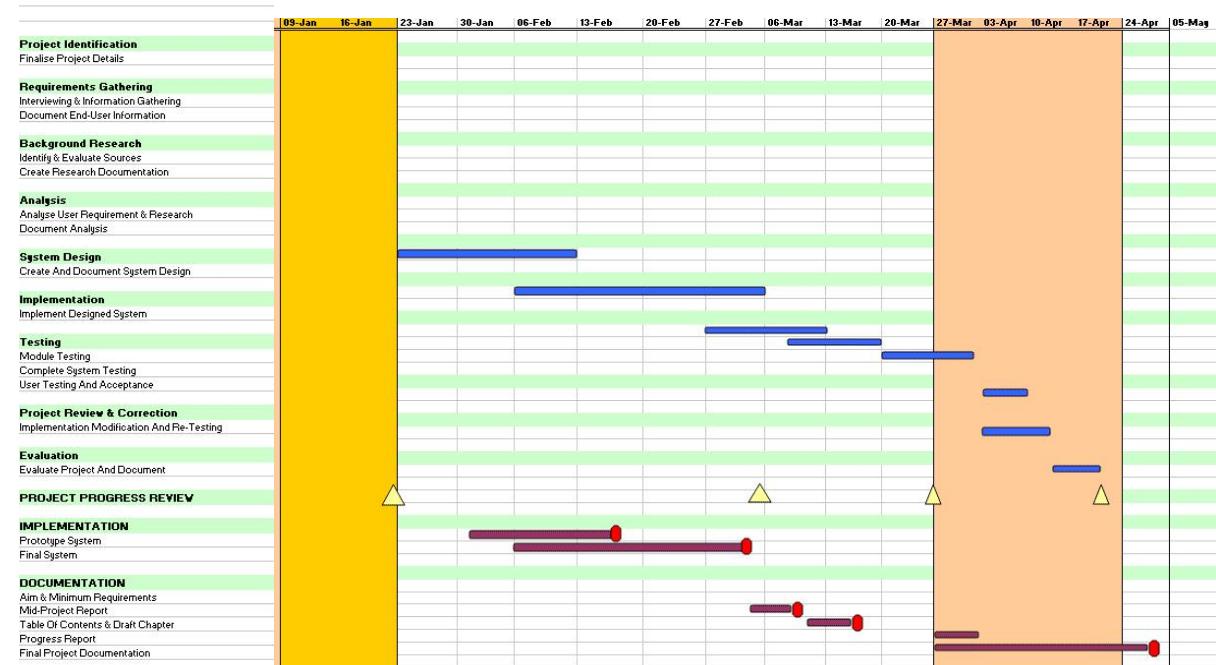
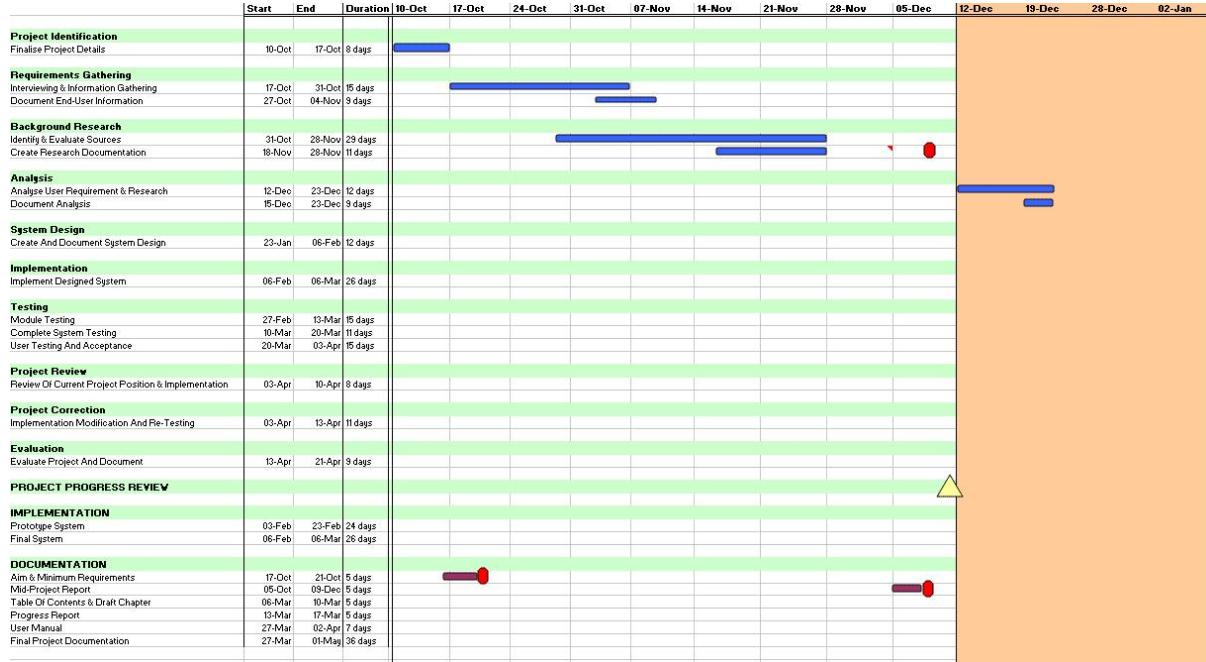
Despite these potential limitations however the Gantt Chart has been selected as the most appropriate tool. The unpredictability (at the outset) of the project activities which would actually be required (beyond the general methodology phases) because of unknown user requirements, makes it difficult to construct an accurate detailed PERT chart, representing the network of specific activities. Consequently constant re-defining of the chart would be required, increasing the resources necessary for project controlling. Instead, providing a high-level schedule of start/completion dates for known phases should prove adequate. Deliverables and review points will allow monitoring of project progress, with modifications to the remaining being made as appropriate.

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<sup>1</sup> <http://www.getahead-direct.com/gwpm14-gantt-charts.htm>

### 3. Project Schedule

#### Initial Project Plan at project outset



## 4. Progress Review Reports

**Project Review 1** Date: 12 / 12 / 05 - "End Of Semester I" – part of mid-term report

*Review: (taken from mid-term report)*

Upon conducting a review of the current status of this project, it is possible to identify both positive and negative points. It can be noted that an appropriate problem has been effectively sourced and extensive information gathering has been done so as to accurately profile the current situation, problems and desired solutions of the end users. At this moment therefore the problem has been extremely well defined and a potential solution identified. To this extent, a portion of the analysis phase has already taken place. This required considerable end user contact. Meetings are documented in the appendix for reference. Unfortunately the cancellation of the second meeting delayed some of the primary information gathering, something which has had a knock-on negative effect. The necessity to document such activities immediately after they occurred meant other background research had to be delayed. Further to this, unexpectedly high workload during the second half of the first semester (coursework) severely hindered project progress. To this end, the amount of documented background research at this stage is less than was planned. Topics to be covered in the background research section have been profiled, and in most cases, research has already been undertaken. Review of club documentation has also been conducted. While primary evidence is relatively complete, some associated topics are missing from the draft background section submitted as part of this report. In order to correct this, extra catch-up time has been allocated during the first week of the Christmas break. This will allow the already identified sources of information to be documented, and any further topics to be covered. Of particular focus will be potential technologies for solutions. Those sections included are also in their unedited 'long' form, so as to provide as much detail as possible on completed research at this stage of the project. Evidence to show the amount of work done into researching user requirements and background organisational information is provided in the appendix for reference.

The 70:50 split of modules in my second semester means a reduced workload will allow extra time to be spent on the project. Upon returning to university after the exam period it is still projected that the background and analysis sections of the project will be complete, so designing can begin immediately. Consequently I believe that currently my project is running slightly behind the initially identified schedule, however it should be easily recoverable in the next couple of weeks. Once the background research has been completed and fully documented analysis can begin formally. Due to the thoroughness of background research and extensive primary research (which included a good knowledge of a desired solution from the end users themselves) analysis should prove a relatively efficient phase. From there it will be possible to begin designing and prototyping to develop working systems which can be evaluated by the end-user so as to provide effective feedback as to project outcome. I am therefore confident as to the forecast for this project and am looking forward to spending an increased amount of time on it over the coming weeks and months.

Corrections were made to the project plan (Gantt Chart). The background research section was extended to reflect the actual time taken (and scheduled for catch-up) the analysis already completed was added to the chart. Documentation of analysis was extended to reflect the continual documentation approach to be adopted. The 'Project Review' and 'Project Correction' phases were integrated to reflect a more-realistic/appropriate approach (not two separate phases). End-user testing was extended to 6 weeks (including testing of initial prototype) so as to allow better evaluation and modification to requirements/implementation. The release of the first prototype was delayed slightly to allow some testing to occur, while an additional review was included at the point of intended prototype release. The final developer testing phase was delayed to reflect this change in approach ie. formal documented testing will begin to validate the implementation once it has been accepted as 'complete' by the end user. Evaluation of the project write-up will still take place over the Easter break, with some 'project review and correction' time being included to allow for any problems/delays which may arise.

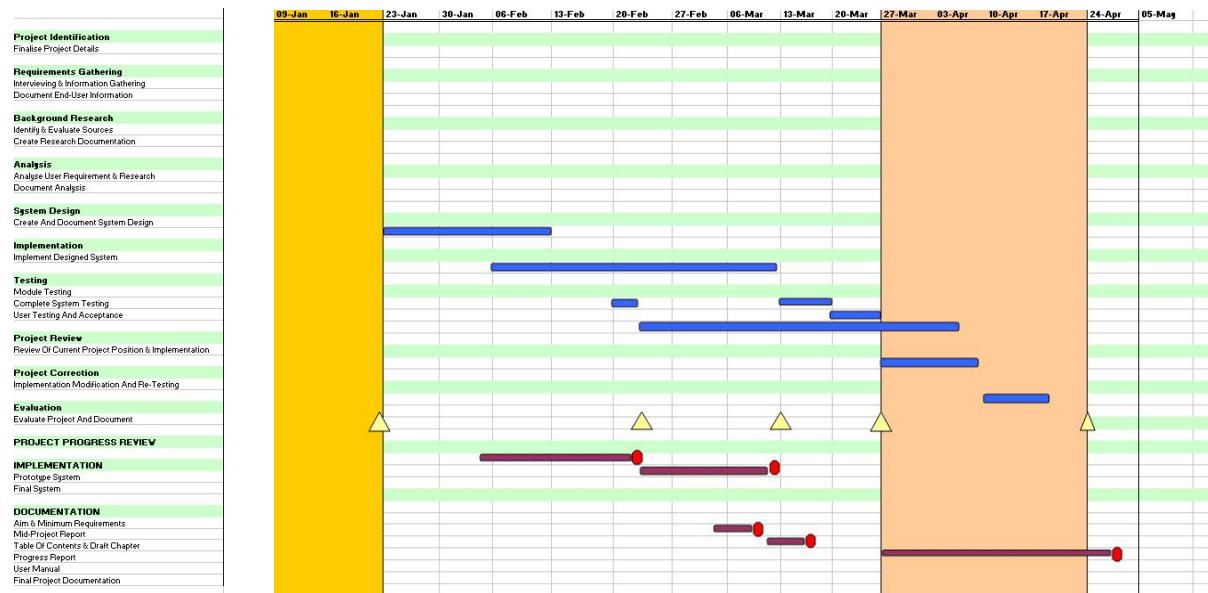
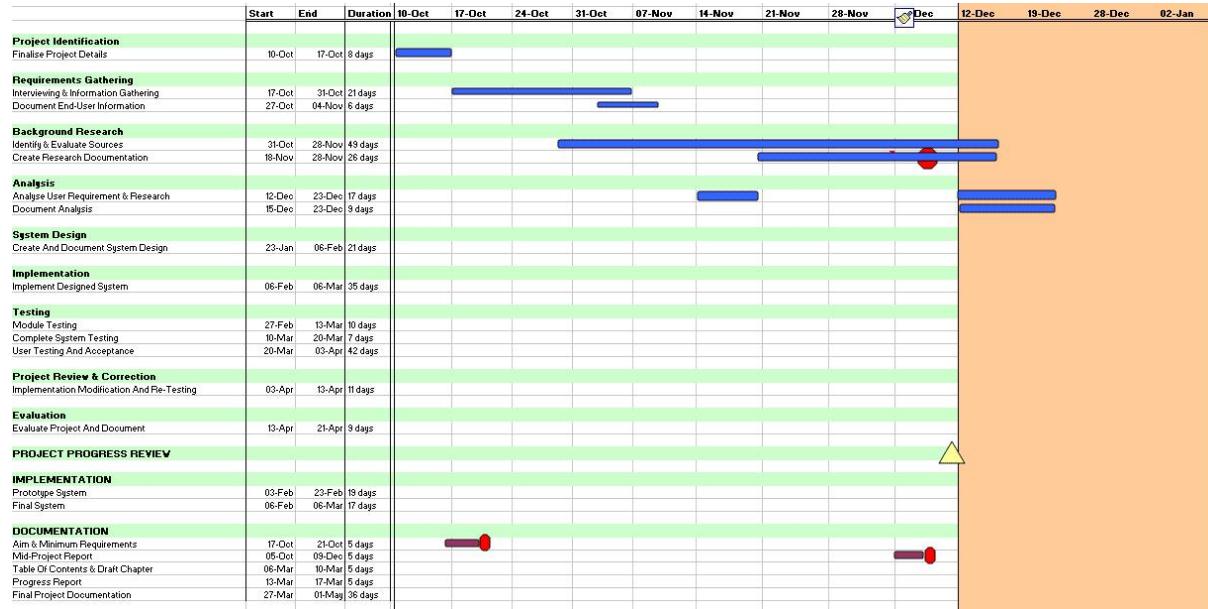
**Current Situation:**

Slightly Behind Schedule However Highly Recoverable

**Corrective Action To Be Taken:**

Allocate extra time during Christmas break to catch up on background research. Complete analysis by start of semester 2 (23/01/06), at which point designing will begin. This will put the project back on schedule.

**Revised Gantt Chart:**



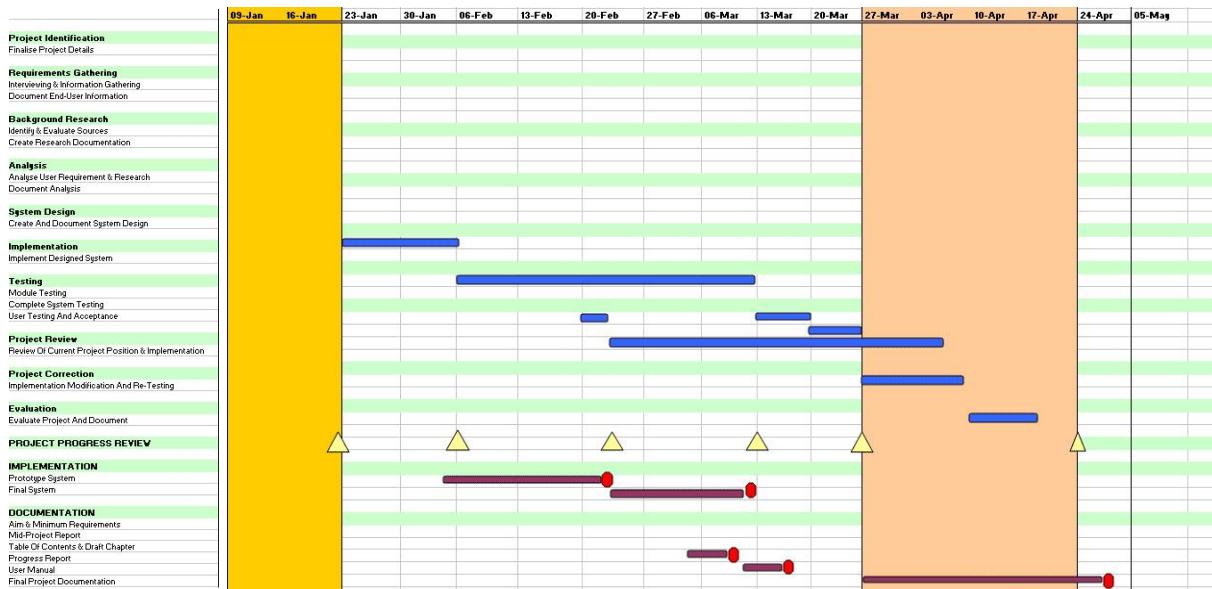
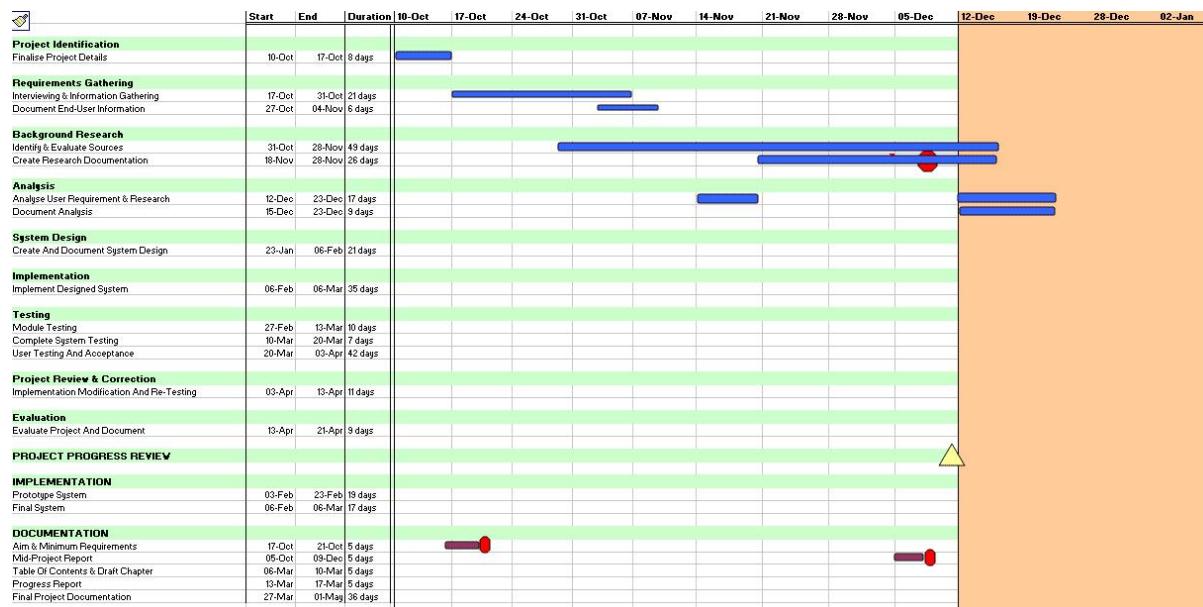
## **Project Review 2** Date: 23 / 01 / 06 - "Start Of Semester 2"

**Review:** During the Christmas break I allocated additional time to catch-up on the incomplete background and analysis. The aim was to have totally completed both by the end of Christmas break to begin designing in semester 2. The recovery attempt was relatively successful, with most of the background section being completed (excluding a few additional topics, which were identified during the Christmas break). Much of the organisational analysis section has been completed and information analysis has been started. A decision was made to split the system into 4 phases so as to allow incremental modular development. Phase 1 (the database and website) forms the largest section and will be adequate to meet the minimum requirements. Information analysis for that phase is almost complete. In a slight revision to the plan therefore it is aimed that information analysis and technical design for phase 1 are to be completed by 05/02/06. This will allow prototype implementation to begin on that date. The incomplete research will also be attended to during this time and should be completed by 03/02/06. An additional review will then be done on 06/02/06 to re-assess the situation.

**Current Situation:** Roughly On Schedule

**Action To Be Taken:** Complete phase 1 analysis/design by 05/02/06, and research by 03/02/06

### **Revised Gantt Chart:**



### **Project Review 3** Date: 06 / 02 / 06 - "Scheduled Design Completion Date"

#### *Review:*

It was planned following project review 2 that an additional review would be done on the date that the design (and research section) was scheduled to be completed, allowing for implementation to begin. The target was met. The design phase is wholly complete, as is research, with the exception of some minor omissions (which will be completed more fully when additional information is revealed through the implementation phase). The next 7 days was originally scheduled as an overlap between design and implementation. This overlap was included to as to allow slight modifications to the design dictated by the realities of implementing. The schedule however removed this overlap to represent a change in approach. Phased implementation and prototyping is to be used to mould the initial theoretical design into a working system. Rather than modifying the initial design however the modifications will be documented as part of the implementation phase.

The current schedule specifies that implementation should take approximately 35 days, being completed by the 13/03/06. It has however been decided that due to the scale of the designed system and the desire to implement beyond the minimum requirements, that implementation will be extended. This will also allow flexibility with regards to demands from other university coursework deadlines expected towards the end of semester 2. The new project requires that the prototype be started immediately and completed by 22/02/06, so some modular testing can be conducted before allowing the user to conduct their own testing and provide feedback to improve the system and develop it towards a final system. It is desired that phase 1 should be completed by 13/03/06, with additional phases being attempted up until 03/04/05, so as to allow a period for complete testing without any additional functionality being added. The new schedule utilises the flexibility time originally build into the schedule to extend implementation, however it remains because this period in the schedule is a time when extensive resources could be dedicated to the project. It is however important to note that flexibility in the schedule is now minimal so keeping to the deadlines specified is vital. In the event of large problems however, phase 2+ of implementation could either be shortened or removed completely (since minimum requirements will already have been met). Review points have been reviewed to ensure they appear at appropriate stages in the project, with the next scheduled for 23/02/06, when an initial prototype of the system should be complete.

A revised project schedule is provided to represent the changes to the schedule made as a result of this review.

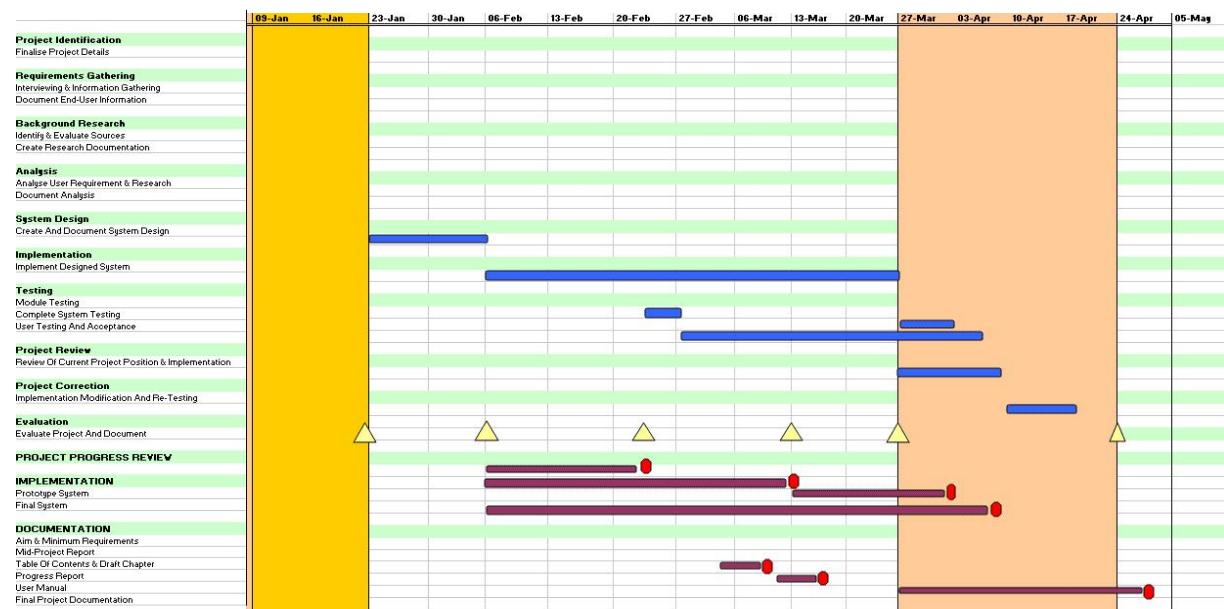
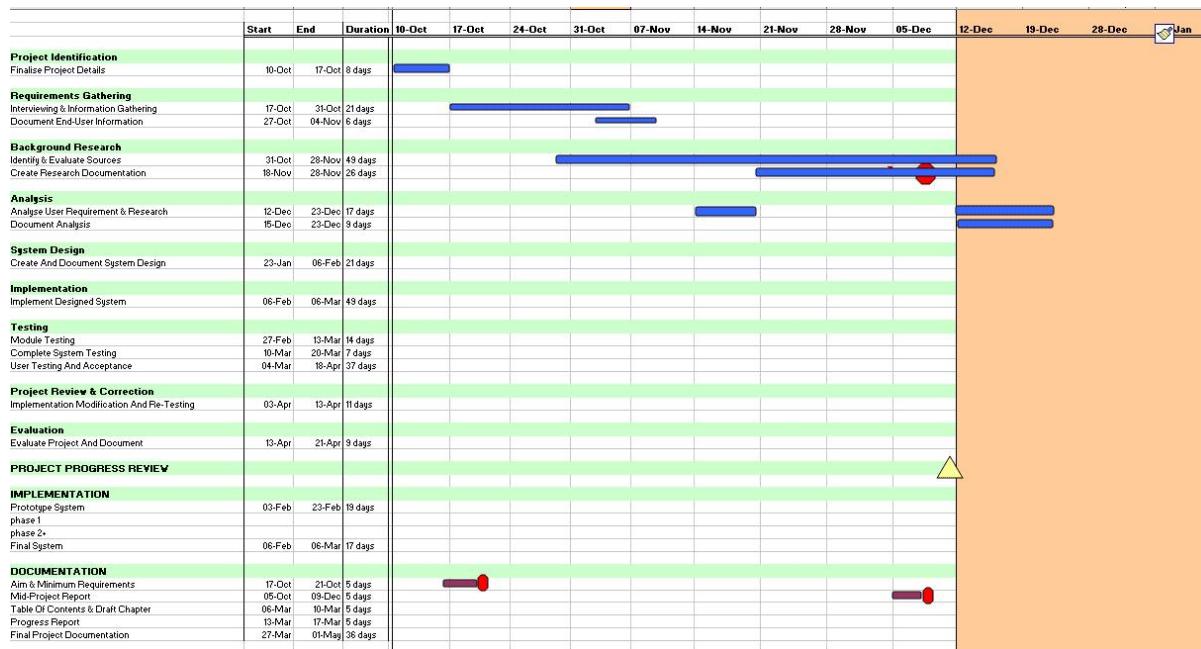
#### *Current Situation:*

Roughly On Schedule

#### *Action To Be Taken:*

Begin implementation phase, next deadline is for completion of a prototype by 22/02/06. Deadline for final implementation of phase 1, 13/03/06.

## Revised Gantt Chart:



#### **Project Review 4** Date: 27 / 02 / 06 - "Scheduled Prototype completion date"

##### *Review:*

In the last review meeting prior to beginning implementation it was envisaged that by 23/02/06, a prototype of a “phase 1 system” would be completed, allowing for review and completion by 13/03/06. There would then be a two week window to attempt phase 2 onwards (development past the minimum requirements). In reality the implementation took a slightly different approach. The reason for this was a conscious realisation that having one end-user review (after prototype 1), followed by a 2 week delay in development while review took place, was a poor approach. The fundamental low-level components of the system eg. page layout etc would become heavily engrained into the system making them more troublesome to correct later. A more repetitive iterative cycle of continual development, review and modification was therefore decided upon –producing several smaller less-complete prototypes. During the development of a phase 1 system, these would be reviewed by the project team in order to guide the implementation in line with the user requirements, while facilitating rapid development. Once a phase 1 system is completed, the club will arrange for thorough end-user review (using selected members), while I simultaneously continue development on phase 2 onwards. The deadline for completion of a phase 1 system was kept as 13/03/06, even though user review would not have taken place during that period. This increase in time allocation was included to represent the increased workload created by the modified approach and changes to user requirements (role-based security, systems administration functionality, personal account details pages).

Up to this point, work on the implementation phase has been relatively successful. Initial progress was relatively slow due to the need to learn the languages necessary, consulting appropriate literature. However after around a week of hard-work, development became much quicker. It is anticipated that prototype 1 will be completed on schedule.

A new project plan has been devised to reflect the changes.

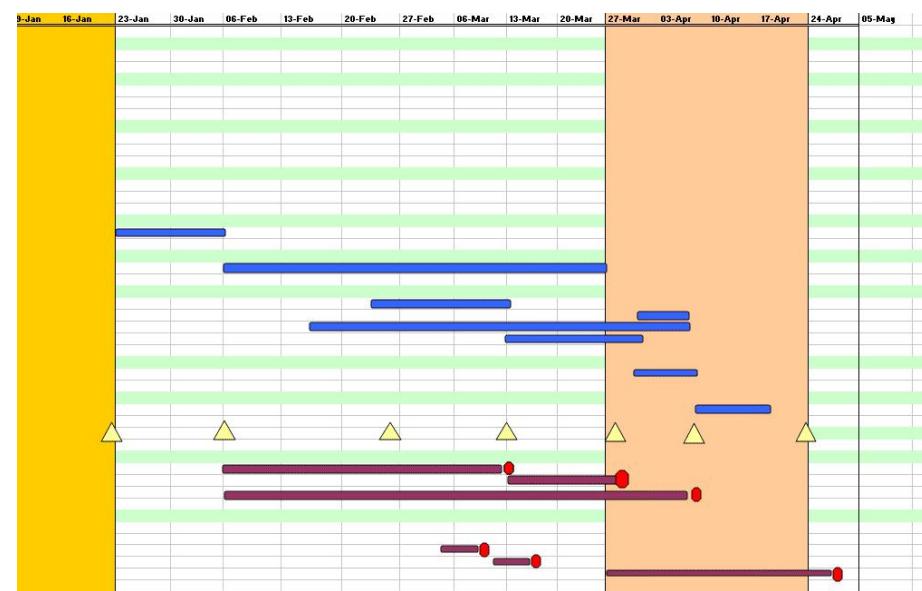
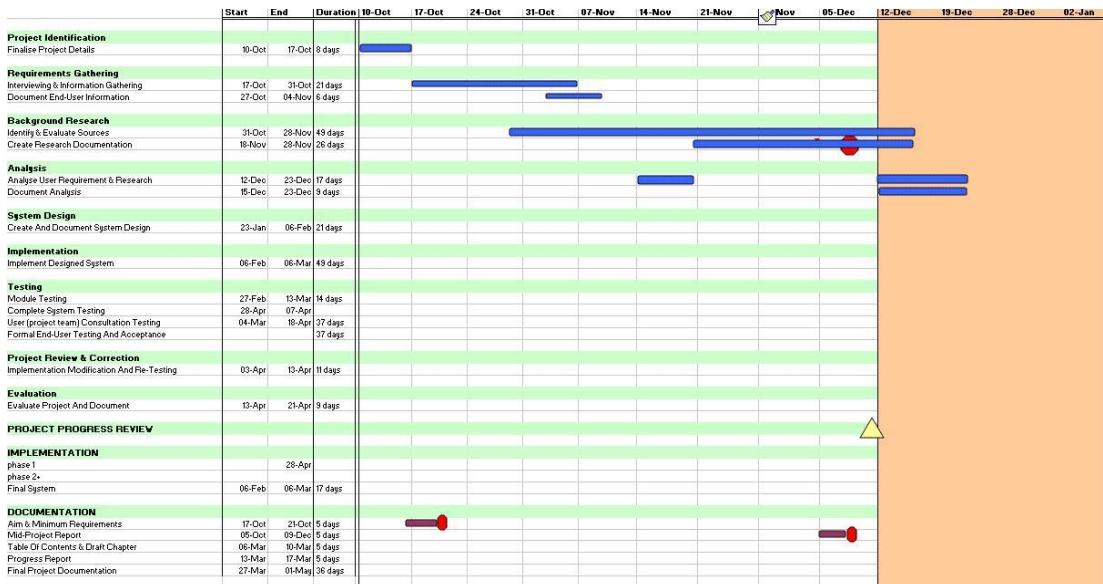
##### *Current Situation:*

Roughly On Schedule

##### *Action To Be Taken:*

Continue development of phase 1 prototype. Deadline for final implementation of phase 1, 13/03/06

## Revised Gantt Chart:



## **Project Review 5** Date: 13 / 03 / 06 - "Scheduled Phase 1 completion date"

### *Review:*

Phase 1 of the system has been completed and is now ready for formal testing by the end users during the next couple of weeks. Summary of work completed:

#### PHASE 1 = Website & Database

##### *13. Website to display club information*

-COMPLETE (needs populating, but to be done by project team during test period)

##### *14. Secured members area – usernames + passwords*

-COMPLETE (role based security also implemented which represents an extension to the minimum requirements)

##### *15. Display secure club information, inc team pages eg. notices*

-COMPLETE (secure members area created, individual team pages created, notices functionality created ie. site created to reflect structure in design)

##### *16. Database information store for fixtures/match information COMPLETE*

*- member details COMPLETE*

*- tactics/training knowledge COMPLETE*

##### *17. Additional Requirements:*

*-Auto-password reset & username request functionality implemented*

COMPLETE (in addition to the reset passwords facility available to the systems administrator, users can reset their own password and request the administrator remind them of their username.)

*-Personal Account Details Page*

COMPLETE (users also provided with a screen that allows them to modify their own account details on the system. This combined with the auto-reset functionality should reduce the workload on the systems administrator considerably)

In addition to this, the auto-feedback facility was also implemented. This allows users to provide direct feedback during the following test period. This had not previously been included in the schedule.

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The period of formal user testing will now commence, with the PTFC project team taking responsibility for ensuring a range of users are issued with accounts and asked to 'play with the system'. Feedback will be collected by the project team and documented in order to provide feedback to myself and prioritise any modifications. I have however also provided an online facility which will allow me to collect direct feedback from the users themselves. The webform collects information/comments and stores them in a database file which I will be able to analyse during evaluation.

During development of phase 2+, each piece of new functionality will be completed and modular tested by myself (as part of my own off-line version of the system). It will then be 'released' into the live system as new functionality. The PTFC project team will then be advised and testing can be completed while I continue further development. This is the most efficient way of continuing development since few fundamental changes will now be made to the whole system. Instead releases are likely to simply provide functionality additions.

Correction of mistakes in the system eg broken links will be done by myself on an ad-hoc basis as required so as to allow effective testing. Changes to the system because of usability/requirements recommendations will however be collated by the team and completed after phase 2 completion: 01/04/06 - 02/04/06

No modifications to the system will take place after 07/04/06. 08/04/06 has been allocated as the official hand-over date of the system to the responsibility of Poulton Town FC. Following that date, the PTFC systems administrator will be responsible for the system.

### *Current Situation: On Schedule*

*Action To Be Taken:* Continue development of the system by progressing into phase 2 Deadline for final implementation of system, 28/03/06, with testing and modification continuing until 07/04/06., and a formal test plan being completed: 31/03/06 -07/04/06.

**Project Review 6** Date: 28/03 / 06 - “Final Implementation Deadline – Completed System”

*Review:*

Implementation of the final system is now complete. Work completed since the last review has allowed the system to surpass its minimum requirements. Work completed is detailed in Appendix L-1 in the Assessor Demonstration Meeting Summary Document.

System development has now been suspended, with the minimum requirements surpassed considerably, constituting great success. During the user-testing phase, the PTFC project team collected feedback and collated suggestions/requirements for system modifications. These have been presented in the form of a “final system update” document. This contains a list of changes which the club would like making to the system before it is delivered, and its content/size was agreed in a meeting with the project team. These updates will consequently be made during the next two days, with testing and correction allowed up until 07/04/06. During this time, the formal test plan will also be completed to ensure thorough and documented evidence of system testing by the developer.

*Current Situation:*

On Schedule

*Action To Be Taken:*

Complete “final system updates” (29/04/06 - 29/04/06) and formal testing (31/03/06 -07/04/06), to be signed-off and totally complete by 07/04/06 –the handover deadline.

**Project Review 7** Date: 08 / 04 / 06 - “Hand-over”

*Review:*

All updates have been made and the system has been handed over to PTFC. The sole focus now is to complete the documentation for the project report.

*Current Situation:*

On Schedule

*Action To Be Taken:*

Continue documenting project report, to be completed by 24/04/06

## 5. Project Meeting Reports

### Project Meeting 1 - 15 / 10 / 05, 12:00 – 12:30

Location: *Phone Conversation*

Aim: *Construct Project Outline and Arrange Further Information Gathering Session*

Present: *Project Team: Stephen A Brown, Poulton Town FC: Chris Davis*

Outcome:

This phone session was conducted so as to confirm the details for the project and get a general feeling for what was required and possible from both parties. We chatted in general terms about the background to the club and why a system was required, including what the club hoped could be gained from its introduction. Some initial ideas were expressed by both parties as to what could be done, and a time-frame was discussed including what responsibilities would be required and when.

In order to explore and document more formal requirements, a second session was arranged for 23/10/05 when I would physically go and meet representatives of the club.

Meeting 1 notes:

Poulton Town FC, based at Cottam Hall And Wyre Civic Centre,

15 teams, youth football, boys and girls, adult teams. Club formed from two separate clubs: Poulton Town (adult) and Poulton St. Johns (youth) merged.

Play on Saturdays/Sundays and train at various times during the week

Central committee oversee and control the club

Funded by local council and fund raising events and registration fees. Mostly voluntary staff. Teams operate independently of each other under the banner of the club. Each team run by the manager and coaching staff. Accountability to the committee is necessary however details of operation are not specified. Result is a vast difference in quality and standard and style of each team operation. Would like to standardise this.

Managers are required to log information however the exact detail is not specified. Information is then collated at the end of season and presented in an end of season review document.

Some managers record lots of information relating to matches players team performance etc, and use it to help run their teams more professionally. Others take little interest and run the team in a basic way, organising training and matches.

Players and teams rarely interact with each other meaning the social feeling and identity of the club is poor. Limited availability and time means events are difficult to arrange. Would like to improve this social aspect to increase communication and interaction of players and staff. Would also like to allow staff/coaches from particular teams to help develop players who do not belong to their team. Some initiatives eg. goalkeeper coaching sessions have been done and were successful, however this is only possible in limited circumstances due to the lack of time available for interaction with the club and training etc. Being able to distribute knowledge to all members of the club would be a good idea. Also providing a football knowledge database where players can look up techniques, tactics, advice on fitness diet, injury treatment etc would be good and assist development. Further more for managers a similar database with training/drills/tactics advice provided would help them improve the quality of their coaching and develop their competence/expertise. Also allowing them to store information relating to fixtures and teams will help them plan better tactics for next time they play the same teams. Being able to plan starting lineups and distribute information to players during the week (before they turn up on a Sunday) would be a good idea as it would allow players to take a more professional approach to their football and be more prepared.

Some club administration facilities would be good as would allow better tracking of money and fund raising/expenditure. Would like a system to be in place for demonstration at the end of season presentation evening next June.

## **Project Meeting 2 - 22 / 10 / 05, 17:00**

<< CANCELLED BY POULTON TOWN FC >>

Location: *Poulton Town Club House*

Aim: *Gather Initial Requirements And Ideas*

Present: *Project Team: Stephen A Brown, Poulton Town FC: Chris Davis, Steve D'Arcy*

Outcome:

This meeting was cancelled by the end user due to unforeseen commitments of those representatives which were scheduled to attend. So as to ensure the project did not fall too far behind schedule, I ensured the meeting was re-arranged for the following week.

## **Project Meeting 3 -30 / 10 / 05, 14:00 - 16:30 (rearrangement of project meeting 2)**

Location: *Poulton Town Club House*

Aim: *Gather Initial Requirements And Ideas*

Present: *Project Team: Stephen A Brown, Poulton Town FC: Chris Davis, Steve D'Arcy*

Outcome:

This was the first physical meeting of all parties involved with the project. The aim was to conduct so intensive brainstorming and then develop some initial user requirements. The meeting documentation is provided.

Identified was; the information to be stored in the database system, functionality required from the system, and surrounding issues to be addressed.

Immediately following the meeting I was able to draw up some initial system sketches to show how information may be arranged and how the overall system may look/function.

Following the meeting I scanned and emailed copies of the meeting documentation to the club for review. It was agreed that the club members would utilise these documents to review the requirements and prioritise them: deadline 19/11/05

The club sent me electronic copies of some club documents/information to assist me with my background research/understanding of the club structure, responsibilities and processes.

## **Project Meeting 4 - 05 / 11 / 05, 11:00 – 11:30**

Location: *Phone Conversation*

Aim: *Review project meeting 3*

Present: *Project Team: Stephen A Brown, Poulton Town FC: Chris Davis*

Outcome:

This meeting was conducted simply to review the content of the previous meeting and clear up any issues which were not able to be closed during that meeting. Information unavailable at the time was confirmed and my thoughts/designs created following the meeting were reviewed (scanned copies of all documentation were e-mailed to the club following the meeting). Additions were made to my original copies of meeting notes in the form of annotations.

## **Project Meeting 5 -13 / 11 / 05, 10:00 – 14:30**

Location: Direct Observation Session – attending a fixture

Aim: *To immerse myself in the club activities and gain insight into operations, while also seeking the opinions of additional club members*

Present: *Project Team: Stephen A Brown Poulton Town FC: Under 10 & Under 15; team & management staff*

Outcome:

This was an extremely valuable session. It allowed for a far greater understanding of the issues relating to the proposed system. I was able to observe the activities of the management staff and players, identifying problematic areas and potential for improvements.

I was also able to query players and staff about problems they experience and what potential improvements could be gained. The level of support for a new system was also profiled, with most appearing to offer considerable support.

Notes from meeting 5:

### Weekly events of manager/players (under 15s):

Wednesday = training session (2 hours)

- warm-up, standard drills, fitness work
- informal review/discussion of previous match performance
- some focus on specific areas required for improvement eg, passing, shooting, dependent on recent performance/manager opinions
- short match
- Warm down
- short preview of forthcoming fixture by manager

Friday = manager checks known lifts to games (if away fixture), checks match arrangements eg. referee, pitch facility, changing rooms etc.

Saturday = checks match details again (game on?), produces team sheet and planned tactics for forthcoming match

Sunday = 9:30- am arrives at ground, checks pitches and arrangements, discusses team and tactics with support staff, lays out kit, sets up pitches, fills in match documentation (team sheet) etc

- 10 am players arrive, get changed
- 10:30 match preview delivered to players
- 10:45 warm up session delivered to players
- 11 kick off
- manager records information relating to match on paper during the game (comments, opinions, statistics etc)

Full time – players get changed, manager fills in match report, gets appropriate signatures, then delivers post match debrief to players regarding the match.

Information relating to fixture is recorded by the manager on paper (eg. player performances, goals, scorers, man of match etc) –this varies in type and quality and detail depending on manager.

### Opinions:

Players strongly supported the ideas for a system. They were particularly interested in the

discussion forums and the potential to see match reviews/prevIEWS online. Older players were interested in the idea of a football knowledge database which would allow them to learn new things, and liked the idea of some variety being added to their training sessions if coaches were able to access new information regarding drills etc. they also liked the idea of being able to look at this information themselves so they could do their own training.

Managers were generally in support of the new system although those who were less committed to the club were concerned about the increased work load it may place upon them. Club committee however commented that this opposition should be able to be overcome through inclusion in their manager contracts. They claim that their high levels of investment in training for coaches and facility development would be able to justify this expectation from managers. Further more they would like to develop a professional committed culture to the club so feel this level of manager involvement should be expected.

#### **Project Meeting 6 - 7 / 12 / 05, 17:00 – 17:30**

Location: *Phone Conversation*

Aim: *To follow up an email sent to the committee members and confirm the status of the project*

Present: *Project Team: Stephen A Brown, Poulton Town FC: Chris Davis*

Outcome:

This phone session was conducted so as to bring the committee and myself back up to date with the situation of the project after the period of non-contact. An email had been sent by myself 3 days earlier containing a statement of what activities were expected to occur over the coming month.

#### **Project Meeting 7 - 12 / 12 / 05, 16:30 – 16:45**

Location: *Phone Conversation*

Aim: *To enquire about current Data Protection considerations employed by the club.*

Present: *Project Team: Stephen A Brown, Poulton Town FC: Chris Davis*

Outcome:

While conducting research into the Data Protection Act, I decided it would be beneficial to find out what current considerations were taken by the club. I was informed that much of the information currently stored (to be stored on the new system in a more complete expanded form) was not covered by the Act due to its nature. Further more, the club ensures permission for data collection/storage is gained as part of the club contracts.

#### **Project Meeting 8, 17 / 12 / 05, 14:00 – 16:45**

Location: Poulton Town Clubhouse

Aim: *Meeting with committee, project team, managers, selected players, to:*

*1- to gain knowledge of the user's computer technical abilities*

*2 - to gather relevant information/opinions/ideas for the new system from key stakeholders*

*3 – to ensure high levels of stakeholder involvement in the project ie. involving as many key stakeholders as possible*

Present: *Project Team: Stephen A Brown, Poulton Town FC: All committee members, entire project team, all managers (excluding apologies), selected players (volunteer representatives)*

*(from various age groups)*

**Outcome:**

This meeting had 3 key objectives. Knowledge regarding the technical capabilities of the end users was required to assist with the analysis of requirements phase. After communicating this need to the project team, managers had collected information relating to the technical competence of the players. This was summarised in the meeting along with discussion of staff ability levels. From that requirements for usability could be agreed.

“The results revealed that most staff considered themselves to be at least ‘competent’. The requirement for being considered competent was “able to use the internet and basic word processors/office packages confidently and competently. The technical competence of players was found to be, on the whole, at least the same as that of managers, with many players considering themselves ‘highly skilled’ thanks to their school studies and personal experience – “able to use confidently use advanced features of computer packages such as databases and spreadsheets, while also using online tools eg. web-based email effectively”

Change Management research revealed the importance of involving users in as much of the development process as possible, so as to reduce resistance and increase the quality and appropriateness of the system. This meeting allows for key representatives to express their opinions about the system, as well as propose ideas for features not already included and discuss issues. The meeting also allowed myself and the project team to extract information from the stakeholders to assist in the definition of formal system requirements. It was also hope that involving key stakeholders in the process would strengthen and broaden support for the new system through them providing feedback to other club members.

**Project Meeting 9 - 21/01/06, 16:30 – 17:15**

*Location: Poulton Town Clubhouse*

*Aim: Project owner (committee) approval confirmation*

*Present: Project Team: Stephen A Brown, Poulton Town FC: Project team, Committee*

**Outcome:**

In line with recommendations for successful change management (identified in research) a meeting was called with the project owners (the PTFC Committee) to ensure strong support for the project was still in place (and encourage this by bringing it to their attention again following the Christmas break). This built on meeting 8 which was designed to involve middle-management (managers and coaches) so as to gain their support and involvement (hoping additionally that they would in turn develop support from the lower levels (helpers, coaches and players).

The meeting essentially reviewed the project’s progress to date. Committee members were shown the documentation (research and analysis phases) which I had already completed, and general requirements were once again reviewed and modified accordingly. The remaining project schedule was then explained with resource/commitments required from both parties explained. The Committee concluded by expressing their strong support for the project and their willingness to provide the resources necessary to see it through to completion.

**Project Meeting 10 27/01/06, 20:00 – 20:15**

*Location: Phone Conversation*

*Aim: Requirements for HCI*

*Present: Project Team: Stephen A Brown, Poulton Town FC: Chris Davis*

**Outcome:**

Having previously emailed the project team specifying that needed some suggestions as to

what was required from the HCI, I called Chris to confirm the details and he provided the following feedback:

*General appearance – professional image of quality rather than an amateur feeling like that in use on the under 15s site.*

*Colour scheme – Black and Orange – club colours*

*Graphics – club will make a number of graphics, photos, logos etc available for use on the site*

*Navigation – like the idea suggested of having a navigation bar which is displayed on all pages*

*Text – must be readable – limit and try to avoid fancy fonts or colours*

*No specific requirements beyond this. Implement what you see fit so long as you aim to produce an overall feeling of ‘professionalism’ and the site (interface) is user-friendly to allow users with limited skill to operate it.*

The general guidelines provide a starting point from which to design a user interface. The club stated that they had no specific requirements other than those mentioned above. Key points stressed were –the orange and black colour scheme and a professional appearance so as to convey the professionalism of the tool.

#### **Project Meeting 11 - 05 / 02 / 06, 10:00 – 13:15**

Location: *Poulton Town Clubhouse*

Aim: *Review Of Analysis and Design with PTFC project team*

Present: *Project Team: Stephen A Brown, Poulton Town FC: Project team*

#### **Outcome:**

Having completed the analysis and design phase I called a meeting to review so as to ensure its accuracy prior to beginning the vital implementation phase. While opportunity for refinements is available after the delivery of a prototype, the pressures of time mean it is important to try and ensure an accurate system is implemented immediately, reducing resource wastage.

The team were impressed with the strategy review and agreed that the tool would contribute considerably to the future of the club in the ways mentioned. They requested a copy of the document to keep in club records as proof of their quest for development as part of the FA charter scheme.

Another strength identified in the analysis were the knowledge maps. The project team were impressed by the visual representation of the ideas they had expressed when defining the purpose of the project and said it conveyed effectively their motivations for the project. Agreement was provided for the criticisms of previously implemented systems and the team highlighted the importance of learning from the mistakes made when designing/implementing the new system ie. making it a more professional system with the reflected in the appearance since they would like to use the public website part of the system to “sell the club” (gain additional sponsors, funding/donations, recruit new players/staff). The requirements were quickly discussed with the priority levels previously defined being confirmed. It was commented that if it was possible to provide some of the ‘online services’ mentioned, this would be extremely desirable, particularly the ‘directions to game’ feature which would encourage parent involvement. It was commented here that the directions tool should be placed on the public part of the site so as to allow opposition to also get directions to PTFC. UML diagrams were quickly discussed and conformed as a correct representation of the activities.

Considerable time in the meeting was dedicated to ensuring the accuracy of the design. During the meeting the ‘site map’ and ‘mockup’ were reviewed and updated to conform to the latest requirements and ideas of the team. This feedback was important because the designs

had been created from the minimal guidelines of requirements provided earlier by the team. Consequently much of the design was based on my research and personal interpretation/ideas. Moulding this into a design accepted by the user was vital in increasing acceptability of the final system because the interface will have a dramatic influence on usability and consequently social and practical acceptability.

The database design was also reviewed with the attributes and integrity rules being confirmed and added where incomplete. Following updating of documentation after the meeting therefore, the project team authorised implementation to begin based upon the designs that had been formulated in the meeting. The team then agreed to the remaining schedule and confirmed that they would ensure appropriate resources were available when requested by myself ie. finance for web hosting and club members for testing of the system between the specified dates.

## **6. Prototype Review Reports**

### **Prototype Review 1**

System Version: 1.1

New Functionality/Features:

- Website layout/appearance template created
- Title Bar created
- Navigation Bar created

Review Purpose: assess the layout/appearance of the templates

Review Conducted By: C. Davies, S. Forrest, S D'Arcy

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- make title bar fill screen horizontally
- add charter standard logo
- add some hover functionality to the hyperlinks in the navigation bar
- put an orange border on the right of the screen also to even up the look
- change the format of the date from dd/mm/yy to be more reader friendly ie. in English... eg. Thursday 20<sup>th</sup> March 2000

Comments:

Like the overall look and feel of the site. Would like to add some news to this homepage to keep it changing and make sure visitors are kept up to date.

### **Prototype Review 2**

System Version: 1.2

New Functionality/Features:

- updates made from last review
- Homepage created
- All static public website pages created and populated briefly/as templates

Review Purpose: to check the appearance of the pages when populated and sign-off the external website section

Review Conducted By: C. Davies, S. Forrest, S D'Arcy

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- none

Comments:

Good external appearance. We will populate when the system is uploaded.

### **Prototype Review 3**

System Version: 1.3

New Functionality/Features:

-added pages with contact forms:

- player/staff advert
- friendly advert
- the PTFC e-community information page
- contact us

Review Purpose: to check the pages containing contact forms

Review Conducted By: C. Davies, S. Forrest, S D'Arcy

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- none

Comments:

- none

### **Prototype Review 4**

System Version: 2.1

New Functionality/Features: tactics information resource added

Review Purpose: to check this functionality

Review Conducted By: C. Davies

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- change the intensity and age range boxes to drop down menus rather than number inputs
- group the information better in the detail page
- add a page that confirms you want to delete something because it's currently too easy to do it by accident
- make sure only appropriate people can add/delete/edit information

Comments:

-the feature that remembers searches is good as it improves usability. The sorting feature is also very helpful, especially when large amounts of data get put into the system

### **Prototype Review 5**

System Version: 2.2

New Functionality/Features: injury diagnosis information resource added

Review Purpose: to check this functionality

Review Conducted By: C. Davies

Accepted/Rejected: Accepted but changes would make it better

Improvements/Changes To Be Made:

change the interface as discussed when we spoke. We would like a better input device if we can because using the same one as tactics is a little bland. Your suggestion about having a clickable human body is good if you can put that in.

can we also add in the information about stretches. I know we took this out of the requirements but we want to improve the younger players' knowledge of this sort of thing so having it on the system would help a lot. An database like the one for injuries but with different details should be fine for that you have time to do it.

We need to add a disclaimer at the bottom to protect ourselves in case anyone hurts themselves and then claims it was because of what they read on the system. I can write one and send one to you if you don't know what to put.

## Prototype Review 6

System Version: 2.3

New Functionality/Features:

- alterations to injury diagnosis tool
- stretches information resource

Review Purpose: to check this functionality is better than before and is as required

Review Conducted By: C. Davies

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

Comments:

This is much better! The clickable man is a really good feature as the younger players will like using it. This will help us to educate them about their body, something which we find difficult at the moment. The disclaimer is fine, and you can use a similar one on the training / tactics bit, while I remember. Like the links you found at the bottom, we can put more of these on there for the players to use. Think this system could be really good! Well done :- )

### **Prototype Review 7**

System Version: 2.4

New Functionality/Features: notices on home page

Review Purpose: to check the content and formatting of notices is acceptable

Review Conducted By: S. Forrest

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

none

Comments:

Fine. Will it be possible to separate the members and public notices so that these on the home page are only the public notices. If that is possible it would be much better because it will present a better image in the public area

### **Prototype Review 8**

System Version: 2.5

New Functionality/Features: events page

Review Purpose: to check the content and formatting of the events notices is acceptable

Review Conducted By: C. Davies, S. Forrest

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

none

Comments:

Again that is fine

### **Prototype Review 9**

System Version: 3.1

New Functionality/Features: members navigation bar

Review Purpose: to check the design of the members additional navigation bar which appears when logged in

Review Conducted By: S. Forrest, S D'Arcy

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

can we put the user's name at the top like they do on yahoo?

Comments:

## **Prototype Review 10**

System Version: 3.2

New Functionality/Features: check the security functionality

Review Purpose: to check the security features used are acceptable

Review Conducted By: C. Davies, S. Forrest, S D'Arcy

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- automatic password resets??

Comments:

Much better than we expected. This was one thing I was quite concerned about but I certainly couldn't break into it. Being able to specify what each person can do through their member type is good because it should make controlling accounts easier. Being able to turn off a members account is also good because it lets us control access much better.

The members bar is great, I like the way it appears and disappears depending on if you are logged in or not. What you said about it being different depending on who is logged in (what options they get) is also neat. I checked and the add/edit/delete part isn't there if you're a player so that is as we wanted.

Can we put the members news on the page that you arrive at after you have logged on?

One problem we have thought of though is that if users forget their passwords, which we think they may do a lot, at the moment Chris or someone else would have to change it. We chatted about this and I think it could be a problem because all of us don't have very much spare time and I get the feeling we might need to be doing a lot of resetting. While we could make them wait, I think this may discourage them from using the system, something we don't want. Is there any way of resetting passwords automatically like on yahoo email. If there isn't then that is something we will have to live with.

## **Prototype Review 10**

System Version: 3.2

New Functionality/Features: automatic password reset functionality and member details edit

Review Purpose: check the accounts administration is now better

Review Conducted By: C. Davies, S. Forrest

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- allow users to change their email address in their details as well as password

Comments:

Perfect! This is so much better and will save us a lot of work I think. Don't expect the username reminders will be a problem, and I agree that for security it would be better not to allow just anyone to request the password and username.

The member news is good on the page that you arrive at when you log in because everyone will see it here

## **Prototype Review 11**

System Version: 4.1

New Functionality/Features: Training Plans/Drills resource

Review Purpose: check the resource is as required

Review Conducted By: S D'Arcy

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

Comments:

Yes that's similar to the tactics bit....like that it's in the same format because people will be able to learn how to use it quicker.

## **Prototype Review 12**

System Version: 4.1

New Functionality/Features: Matches/fixtures resource

Review Purpose: check the resource is as required

Review Conducted By: C. Davies, S. Forrest, S D'Arcy

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- can we change the search bit depending on whether it's a preview or report because the interface is a bit confusing as it is

Comments:

Like this, this will help us so much in storing information on the matches. The fact the players can see it as well is good. The format is nice, know you have worked hard on this. The way it changes the grounds/oppositions differently depending on the team is a really nice trick. The match preview information is superb, we are going to get players to look at these before games to prepare better. The searching/summary tool is also great because we can analyse the performances which was much more difficult before.

## **Prototype Review 13**

System Version: 5.1

New Functionality/Features: Internal Messaging

Review Purpose: check this emergent feature has been implemented as required

Review Conducted By: S. Forrest

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- put a message when user has 10 messages (so they delete)

Comments:

Superb, it's just like email! Would be good if we could link this to the member search so its easier to send. Think this feature will be very useful and it does all our needs for internal messaging so don't need to do any more on the quick contacts part for managers committee etc. can just link to this.

### Prototype Review 14

System Version: 5.2

New Functionality/Features: Full member directory

Review Purpose: check the resource is as required

Review Conducted By: C. Davies, S. Forrest

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

Comments:

Good, like this. It will be useful in helping staff especially to locate specific individuals eg. other coaches. The link to the internal messaging system is nice.

### Prototype Review 15

System Version: 6.1

New Functionality/Features: Chat forum

Review Purpose: check the feature has been implemented well enough

Review Conducted By: S. Forrest

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

Comments:

Wow. This is such a great tool. I think this will go the furthest to bringing the club closer together. The rooms are nicely laid out and the usability is really good. Nice and simple. Like the fact that admin and the person that created the post can delete. We will try and get people to start chatting on here so you have some feedback as well like you said.

Being able to de-activate users from the system is good as if them make inappropriate comments here we can remove them.

### Prototype Review 16

System Version: 7.1

New Functionality/Features:

Directions to games page

Directions to games and weather on match reports

Directions to facilities and weather on public area

Review Purpose: check the feature has been implemented well enough

Review Conducted By: C. Davies, S. Forrest, S D'Arcy

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- can we have one which just lets you enter your own route –start and end – in case the details are wrong or missing so we can just tell people what to enter or they can look themselves

Comments:

Yes like the dedicated directions page, parents will be able to access this which is good. By the way also noticed that they can access just the parents room/general room in the forum. This is good because it restricts the info they can see.

Like the info displayed on the match preview as will help much better with preparation and is also match specific. The bit in the public area is good as it will help people to find us. The map with our logo is very slick. Presents a sophisticated image to outsiders.

## Prototype Review 17

System Version: 7.2

New Functionality/Features: Facility booking

Review Purpose: check the feature has been implemented well enough

Review Conducted By: C. Davies

Accepted/Rejected: Accepted

Improvements/Changes To Be Made:

- fix the bug about January and November pages not displaying

Comments:

Brilliant. Don't worry about it not coping with clashes. This is maybe something we can look at in future. Just being able to post when facilities intend to be used is good enough as we don't even have that at the moment. Having it on a calendar is really nice as it prevents people from missing it if it were just records.

## Prototype Review 18

System Version: 7.4

New Functionality/Features: Events calendar

Review Purpose: check the feature has been implemented well enough

Review Conducted By: S D'Arcy

Accepted/Rejected: Accepted

Comments:

Good this is even better than the last one though I like that you have left that in as well. Having events on a calendar is nicer as people will understand it better and know when things are actually taking place.

## **Appendix C –Background Research**

### **1. Research Planning**

#### RESEARCH PLAN FOR FINAL-YEAR PROJECT

##### A. Sources to assist in identification of appropriate research topics:

- Past final year Computing projects*      -*those implementing similar systems*  
    -*those which achieved 1<sup>st</sup> grades*
- Literature about final year projects*
- Advice from project supervisors, lecturers*
- Past module notes in relevant subjects, with particular emphasis on SE22 Project Management*
- Past IS projects*    -*my own*  
    -*reported in industry*
- Analysis of mark-scheme to identify what marks are awarded for and identify vital components necessary to complete a successful final year project*
- Collecting initial low-detail requirements (the scope of the project and the desired system from a high level) from the end-user to as to identify what type of solution is required and what methodology/technologies may be appropriate to use*  
    \**additional topics to be researched as discovered during the project ie. most likely; after formal requirements gathering, testing phases*
- Personal experience eg. Industrial placement*

##### B. Topics derived from these sources

- *Lessons learned by students having previously conducted final year computing projects, in particular those who implemented similar systems & gained high grades*
- *Industry/ Lecturer material providing advice on final year projects – SoC project website*  
    - *published literature*
- *Reasons why systems/projects fail*
- *Primary End-user Research regarding situation*
- *Existing system*
- *Off-the shelf packages /similar systems to that desired*
- *Technology specific research appropriate to the situation – databases, www services, servers etc*
- *Feasibility Studies*
- *General IS project topics*    - *methodologies*  
    -*technologies*  
    -*HCI*  
    -*Security*  
    -*Human Issues in IS systems*  
    -*Legislation*  
    -*Data Protection*

## 2. PTFC Documentation Analysis Summary

### PTFC Documentation Review:

#### End of season programme

The club emphasised the desire to discontinue producing end of season reports by instead producing the information via the website on a continual basis throughout the season. They however expressed the need to retain the information currently displayed in the programme and possibly even add to it. End of season programmes have a double page spread covering each team. Included features are; team photo, manager summary of season comment, comment on each player for season, summary of match statistics (goals scored, conceded, results, scorers). Such statistics should also be stored on the system. Advertisements are also included in the programme which could be provided online.

Another noted point is confirmation of the vastly different quality of information logged by each manager and presented-some contain comprehensive statistics, others contain little more than a brief comment.

#### Directions To Pitches

Directions are currently produced on a printed A3 sheet. Once they are produced at the start of the season they are updated through manual written comments by each manager which often results in mistakes. Directions are also very basic written comments and are often difficult to interpret. The comments need to be referenced onto a map manually to obtain the route. An automated facility would therefore be beneficial.

#### Referees List

The list of referees is relatively basic however the same problems exist with updating contact details, so once again a central online records system would be preferable.

#### Club Advertisements

Numerous advertisement were examined. Most are in the form of A4 posters which are put up around the local area on advertising boards. Colour printing so as to attract attention is costly, while the amount of information that can be contained is limited. Further more contact is also difficult for respondents because they must remember/write down the contact details. Once again an online advertisement area could therefore be beneficial with the club being able to focus on getting people to check the website regularly instead. This could be achieved through linking to other sites.

#### Staff/Player Advertisement

Advertisements need to convey a lot of information. They effectively read much like a job description and have a formal appearance as a result. Contact details are provided but benefits would be gained from getting enquiries directly via the website.

#### Events Notice

An example of an events notice printed on A4 which is handed out to players to take home (for parents). While the medium is effective at communicating the information, it does not present a very professional image and the comment was made that many often do not make it home because players lose them. Further more the cost of producing such printed pages is high in comparison with the benefit gained.

#### Standard Newsletter

The standard newsletter conveys general information about the club and what has been going on. They are produced every few months and once again problems exist with them getting lost. Further more they are also troublesome to produce and cost a lot of money. Squashing a large amount of information onto one page also results in a cramped non-professional appearance.

#### Staff Contact Details

Staff contact information is provided to managers at the start of the season in the form of a print-out. As details change or new contacts need to be added, they are written onto the page by the individual manager. This results in inconsistent club data and sometimes omissions. This dramatically affects the efficiency of working processes. A method of storing central contact details which the individual member can keep up to date would be very beneficial.

#### Player details

Similar details are stored for each player to allow the manager to keep contact of their players. These are logged centrally by the club when players register at the start of the season. Updates during the season are written on the form by managers, but are rarely updated centrally. This means other managers/staff wanting to contact players must first contact the manager. Further more if managers lose contact information it can be difficult to retrieve.

#### Qualifications log

Staff qualifications are recorded in a spreadsheet by the committee. If it needs to be queried by a member, then they must contact a committee member and get them to retrieve it. Often this takes some time.

#### Summary of team/player statistics for the season

Statistics are recorded manually by the manager. The quality of information varies greatly depending on the manager. Information generally stored and produced at the end of the season includes player appearances and goals, team wins, losses, draws. This is often recorded on paper by the manager and updated manually each week. Mistakes are therefore easy to make. The ability to conduct analysis is also difficult.

#### Training Plans

Training plans are made on paper by managers, with no formal club training documentation in existence. These are usually obtained by the managers/coaches from documentation they find themselves. The standard of drills varies greatly, reflecting the skill/ability/experience of the managers/coaches. Generating a standardised high standard of training plans for all to use would be extremely beneficial in improving the quality of football support.

### **3. Framework For Choosing A Project Methodology**

The framework by Avison and Fitzgerald (1995) allows understanding of each methodology's features, strengths and weaknesses, indicating issues for consideration when selecting a methodology:

#### **1. Philosophy** – principle/set of principles which underlie the methodology

**a) paradigm** – science '*hard*' approach ('coping with complexity by breaking things down into smaller and smaller parts for examination and explanation') versus systems '*soft*' approach ('suggest that human systems have more emergent properties, with the individual components performing differently when part of the whole system')

**b) objectives** – some methodologies may assume the objective is to develop a computerised system, whereas others aim to discover if a computerised system is actually necessary. PTFC have indicated that a computer system is specifically required so this is an important consideration.

**c) domain** – traditional methodologies usually take a bottom-up approach, focussing on solving a specific problem. More recent approaches have taken a top-down approach, recognising the need to analyse the organisation as a whole, devise an IS strategy, organise data/resources and integrate an effective overall solution.

**d) target** – some methodologies are general purpose, while others are specifically targeted towards solving a particular type of problem, in a certain environment or type/size of organisation.

**2. Model** – provides the basis for the methodology. It dictates communication methods, methods/techniques used for understanding the problem & designing a solution.

**3. Techniques & Tools** – some methodologies utilise specific tools/techniques as part of their methodology. This can have an important effect on activities, skills and resources required by the project team.

**4. Scope** – the scope of a technology indicates which stages of the systems development life-cycle are covered by the methodology, in addition to the level of detail/focus allocated to each phase. Different problems may require different range/focus of coverage, making different methodologies preferable eg. SSM has a heavy focus on early phases of development, but provides little assistance in later implementation/ testing phases. It is noted however that gaps can often be overcome by merging methodologies together.

**5. Outputs** – it is important to consider what the methodology will produce in terms of deliverables at each stage, and the final product. This can vary from simply an analysis specification, or a complete working implementation of the system.

**6. Practice** – consideration of the practicalities of a specific methodology should be considered in terms of

**a) background** – commercial or academic focus

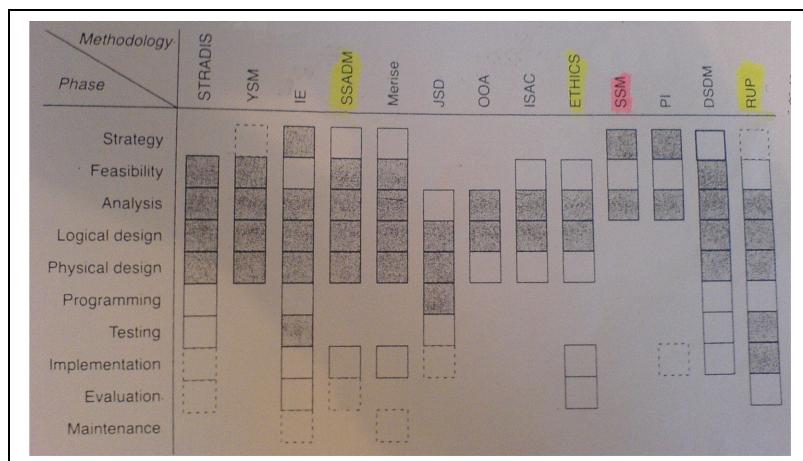
**b) user base** – number/type of end-users

**c) participants** – balance of professional analysts and end-user involvement in the process.

**NOTE:** The authors stress however that this framework is not exhaustive and additional features such as '**speed of system development**' and '**quality of specifications/documentation produced**', two important considerations in this project.

## 4. Profile Of Considered Methodologies

The diagram below shows the ‘coverage’ of the many common methodologies:



From Lau (2005) - IS33: Leeds University SoC

### RAD

RAD does not prevent the use of elements from structured methods like generating a logical data structure. Indeed effective analysis and design are still vital components. However the emphasis is moved towards producing implemented systems quickly. Techniques such as JAD sessions can be used to quickly develop user requirements, while prototyping is often used to develop a system incrementally, reducing development time.

### The Rational “Unified Process”

Another alternative is to adopt an ‘object-oriented’ approach. The most popular vehicle for this is the ‘Rational Unified Process’, <sup>[1]</sup> which uses UML (Universal Modelling Language) to assist development. The process is based upon iteration, with projects being effectively split into 4 phases; inception, elaboration, construction and transition. <sup>[2]</sup> With each iteration the level of detail increases so the system develops through the four phases until it is complete. Software made by Rational exists to support the use of this process (Rational Unified Process). This can greatly assist the control and effectiveness of large project teams.

### ETHICS

ETHICS is regarded as a Socio-Technical philosophy and essentially considers the importance of integrating these two entities effectively. Much of the methodology focuses upon people and processes, however unlike with SSM, it does include steps that facilitate consideration of technical solutions, designing, implementation and evaluation.

<sup>[1]</sup> <http://www.google.co.uk/search?hl=en&lr=&safe=off&oi=defmore&defl=en&q=define:Unified+Process>

<sup>[2]</sup> [http://en.wikipedia.org/wiki/Rational\\_Unified\\_Process#The\\_Inception\\_Phase](http://en.wikipedia.org/wiki/Rational_Unified_Process#The_Inception_Phase)

## 5. Evaluating Appropriate Mediums

Below is an evaluation of the various alternatives along with their relative advantages and disadvantages:

### 1. Personal Computer (WWW)

**Advantages** – extremely rich medium, PCs with Internet access are relatively common, ‘in-vogue’ technology, high interactivity possible, links to/integration with other WWW resources possible, relatively cheap/easy to implement, pervasiveness and durability of information, dynamic/customised information possible

**Disadvantages** – requires a PC with Internet connection, security problems

### 2. Personal Computer (E-mail)

**Advantages** – delivered to a specified pick-up point

**Disadvantages** – limited interactivity/customisation, maintaining distribution lists difficult

### 3. Mobile Phone (WAP)

**Advantages** – remote access – extremely convenient

**Disadvantages** – limited richness of medium, interactivity more difficult, reduced functionality, small screens, limited processing power, low bandwidth (9.6k in UK – 6times slower than broadband) <sup>[1]</sup>

### 4. Mobile Phone (SMS Text Messaging)

**Advantages** – remote access, direct and convenient contact

**Disadvantages** – only text information or basic photographs, high cost, maintaining contact lists difficult

### 5. Television (teletext/digital television)

**Advantages** – convenient medium – in most homes and in the living room, interactivity becoming possible

**Disadvantages** – extremely high cost, not yet fully developed technology

### 6. Phone Based service (recorded messages/telephone conversations)

**Advantages** – very convenient

**Disadvantages** – limited to voice information, usually high cost

<sup>[1]</sup> Avison, D et al (2002)

*Developing Web Information Systems – Butterworth-Heinemann*

## **6. The Internet & World Wide Web** –background information

The Internet has evolved considerably since its initial conception as a basic data sharing tool for a limited number of educational institutions. Today it is widely accessible to huge number of people and is able to support a vast array of application/data formats, constituting a vital tool in world-wide information distribution.<sup>[1]</sup> The persistence and pervasiveness of the medium makes information accessible by anyone, anytime, and anywhere, facilitating non-simultaneous, distributed communication. The Internet uses a number of layered protocols to facilitate this. The success of the Internet is largely due to the adoption of a single standard, known as TCP/IP, which controls the exchange of data packets across networks. Numerous applications utilise this low-level infrastructure to provide services, such as SMTP (email) and FTP (file transfer). The most popular however is the World Wide Web (WWW), which operates on port 80 and uses HTTP protocol as an agreed way for handling web page requests and communicating content. Files (located at specific URLs) are stored on servers (identified by a domain name) and accessed by clients using a browser.

In addition to being more pervasive, publishing information on the web is also relatively inexpensive compared with more traditional mediums, allowing effective distribution of information to a large audience. Consequently this medium can be exploited by PTFC to maintain a centralised information resource and allow geographically distributed members to access it when convenient for them.

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<sup>[1]</sup> <http://www.invir.com/int-bus-advantages.html>

## **7. HCI & Usability – Neilson's 10 Principles**

### **1. System status visibility**

The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.

### **2. Match between system and the real world**

The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

### **3. User control and freedom**

Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo/ redo.

### **4. Consistency and standards**

Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

### **5. Error prevention**

Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

### **6. Recognition rather than recall**

Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

### **7. Flexibility and efficiency of use**

Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

### **8. Aesthetic and minimalist design**

Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units and diminishes their relative visibility.

### **9. Help users recognize, diagnose, and recover from errors**

Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.

### **10. Help and documentation**

The system may be operable without documentation, but help and documentation may be necessary. It should be easy to search, focused on the user's task, list steps to be carried out, and be concise.

## **8. Ten Principles Of Change Management**

### **1. Address the ‘human side’ systematically**

-people issues are inevitable. Dealing with these on a reactive basis case by case puts morale, speed, and results at risk. A formal approach for managing change beginning with the leadership team and then engaging key stakeholders should be developed early and adapted often. Redesign of strategy, systems or processes may be necessary.

### **2. Start at the top**

-change is unsettling so all eyes will turn to the committee and leadership (project team) for strength support and direction. The leaders must therefore embrace the change themselves first, and must also be supported.

### **3. Involve Every Layer**

-change efforts should push responsibility for implementation down so that change cascades through the organisation.

### **4. Make the case formal**

-individuals will naturally question to what extent change is necessary, so write a vision statement to articulate a convincing need for change. Also demonstrate the organisation has a viable future and the leadership team can achieve what they aim.

### **5. Create Ownership**

- leaders should take responsibility for change, requiring more than simply buy-in or passive agreement. This is often best created by involving them in identifying problems/solutions and offering incentives/rewards.

### **6. Communicate The Message**

-The best change programmes reinforce core messages through regular timely advice that is both inspirational and practical.

### **7. Address the cultural landscape**

-Profile organisational readiness for change, bring issues to the surface and identify conflicts and sources of resistance /leadership. These core values, beliefs, behaviours and perceptions that must be taken into account for successful change to occur.

### **8. Address Culture explicitly**

-once understood culture should be addressed thoroughly. Leaders should identify the behaviours which will best support the new processes and reward them, modifying or embracing the culture as appropriate.

### **9. Prepare for the unexpected**

-Continual assessment of change impact and the organisations ability to adopt change is necessary. Resistance may fade or the external environment may change.

## **10. Speak to the individual**

-Individuals are likely to be extremely involved with their work, especially in such a voluntary involvement environment. They need to know how things will change and what is expected of them. They must be involved in the change process and realise the rewards. Individuals standing in the way may need to be removed.

These points are supplemented and enhanced by lessons drawn from a Business Process Re-engineering Guidelines <sup>[1]</sup>

- Ensure support is sought from representatives belonging to all levels of the business –ensure involvement of all those involved with/affected by change
- Middle management and senior management should work together to ensure the direction and scope of the project is fully understood and agreed as appropriate by both parties. It should also be reviewed periodically, and approval of project owners should be gained on a regular basis – through continual review/presentation
- low-level workers should be involved in analysis and idea generation phase as they are most in tune with what processes involve and may help avoid radical change of requirements through incremental alterations to existing processes.
- projects should be independent of any one individual stakeholder group, so project can continue even if they leave
- structure / desire for level of change must exist to support the transition

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<sup>[1]</sup> Dennis, A; Carte, T; Kelly, G (2003)

“*Breaking the rules: success and failure in groupware-supported business process reengineering*” – Decision support systems 36 (2003) p. 31-47

## **Appendix D –Organisational Analysis**

### **1. Task Description For PTFC**

“Despite being a non-profit making organisation, considerable effort is required to support Poulton Town’s club activities. A central committee (consisting of adult and junior representatives) oversee the entire club. They take responsibility for most ‘off-the-pitch’ activities, such as fund raising, club development, facility management, league/FA relationships, staffing etc. Rigid structure, processes and responsibilities surround much of this activity, as outlined in the club’s constitution document. Club finances are the responsibility of two elected treasurers (youth and adult representatives). They maintain the club accounts and authorise/document donations/expenditures. This is currently done manually. Expenditure is either pre-authorised by the treasurer (money withdrawn from club account), or expenses are submitted by club staff and re-paid. All activity is recorded on paper documents.

Information on all club registered players, staff and members is held centrally by the committee, on paper records. Duplicates of appropriate individuals’ records are given to team managers for reference. Information stored includes personal details, contact information, qualifications etc. A problem currently experienced is that often information becomes inconsistent or out-dated. Having no centralised information source also means sometimes staff or players find it difficult to find information they require, having to make numerous phone calls to try and locate it. This is an especially big problem on match-days when time can be limited before kick-off.

After a match, the result is reported to the central league by filling in and posting a ‘match report form’ and a ‘referee evaluation form’. In addition, managers note information relating to their team/matches for club record-keeping purposes. This is done on paper and stored by the manager themselves. Often records of matches are lost. The detail required is also not specified formally so the quality/variety of recorded information varies considerably depending on the manager. As an example, one team manager even maintains his own website displaying a large amount of information on his team’s performance, while records of the preceding season show another manager only recorded player appearances, goals and Man-Of-The-Match Awards. Information on player and team performances is required to be collated at the end of the season so it can be added to a season review booklet which is given to players on presentation evening. This requires lots of manual processing by the managers and mistakes are sometimes made. The accuracy of such player/team statistics is very important to the players who become upset if errors are made. Information recorded during the season is also used to assist in the allocation of various awards such as ‘player of the year’ and ‘most improved player; and ‘clubman of the year’. The huge differences in quality of recorded information (usually dependent upon manager interest/commitment) means some teams receive a far better season summary. As a charter standard

club, Poulton Town would like to improve and standardise the information recorded for each match (relating to both player and team performance), to give all players, irrespective of team, the same quality of feedback, assisting them in their personal development. Having this information available throughout the season (not just in summary form at the end), and being able to manipulate/utilise it, would be even better because it would provide players/managers/staff with a valuable tool to assess ongoing development. They also believe such a computerised system would greatly enhance the professionalism and image of the club allowing them to attract better quality staff.

The running of each individual team is left to the manager. The club make no stipulations as to how the team should be run, they simply provide advisory guidelines, with performance monitored informally by the committee. The consequence of this is that the quality of support provided to players varies considerably between teams. For example, some managers record large amounts of information relating to player and team performance, make notes on oppositions for future fixtures, research and implement better training drills and tactics etc. In contrast, other managers demonstrate far less involvement, simply organising training and matches, with little pre-thought. The club realise that improving the standard of coach selection is of fundamental importance, however they believe providing a facility for recording/utilising recorded performance information and accessing football knowledge eg. training plans, drills, tactical advice etc (and introducing guidelines to ensure it is used), will help to raise standards.

Further to this, by facilitating the sharing (distribution) of the stored information, they hope to allow the more committed/competent staff, to assist the development of players outside their own team. Currently each team is run completely independently of any other, so players only receive coaching advice (training, tactics, techniques etc) from the staff responsible for their team (teams train independently of each other due to differing needs and practical considerations, resulting in the club becoming a distributed community). The particular skills/competencies of each manager/coach usually varies considerably. This means differing standards and ‘types’ of ‘footballing support’ are provided to players in each team. Further more, because coaches are only able to pass on their knowledge to a limited number of players ie. to players in their own team, staff resources are being wasted. A facility which could allow competencies/knowledge of staff to be documented and shared within the club could therefore prove extremely advantageous in improving player development and team performance. Managers would have a centralised club resource for training ideas, tactics, player/skill development techniques etc which they could use to help develop players in their team. Such a facility would also aid knowledge retention when managers/coaches leave the club.

Competition and fixture information (date, time, opposition, location etc) is provided to the club committee by the League at the start of the season in paper format (with changes being communicated later as appropriate). The managers and committee are then able to allocate pitch/changing room facilities as appropriate with paper records being held by the committee and

managers. If changes to this schedule occur, managers have to communicate between themselves to find appropriate solutions/facilities (voluntary committee members are not always available and do not have the time or resources to deal with all problems). This is often extremely time-consuming and inefficient, requiring numerous telephone calls. An additional problem encountered over recent years has been catering for the girl's team matches. Laws stipulate that children of opposing genders must not share changing facilities. Poulton Town's changing facilities consist of two rooms, one of which is large enough to cater for up to 3 teams at once. Scheduling fixtures appropriately to ensure separation of genders is therefore vital, yet extremely difficult. The club would like a centralised booking/allocation system for pitches and changing rooms.

Standard club documentation/information is also distributed to managers by the committee. This includes, match/league rules, club guidelines/rules etc. These are then cascaded as appropriate to players, parents etc, on paper. However this is extremely ineffective because the documents are often quickly lost. Having a centralised location for displaying the information would be extremely beneficial. The club feel a website would be an extremely effective method.

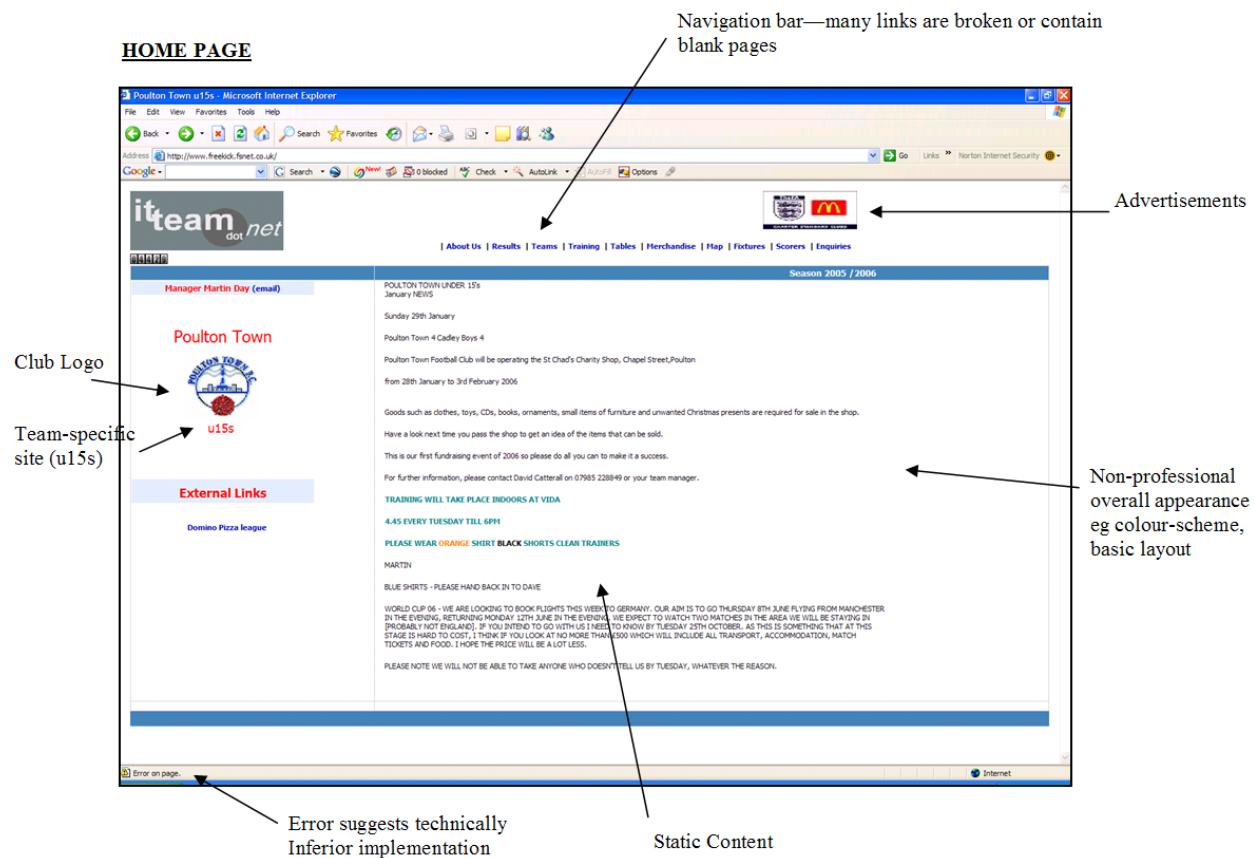
The distributed nature of club activities means there is an inherent lack of club identity and spirit. Teams operate independently of each other meaning lack of interaction/communication between teams. Further to this, because most teams train and play once a week, players within the same team also have relatively little social interaction with each other. Managers say fostering a feeling of team/club-spirit is extremely difficult, yet it can be an extremely important factor in encouraging team success/development. A method of allowing players to interact more than twice a week would be extremely beneficial. Studies have also shown that player development can be increased dramatically by allowing players to review their performance post-match, discussing performance and learning from mistakes. A problem with having such long delays between meeting means the details/impact of the last match are often forgotten by players, hindering review and development. A method of allowing discussions/social interactions for club members between training/matches is desired by Poulton Town. The geographical distribution and differing times of availability/amount of commitment possible, make this extremely difficult in physical form. The concept of creating an e-community is regarded highly by the club because it would allow discussion of issues even when physical contact is not possible. Providing access to information stored in the system on tactics/training/techniques also means players have the opportunity to progress their own development faster than can be achieved with the limited physical resources the club is able to provide. Players would be able to learn/understand documented football theories and techniques and then apply them in training/matches."

## 2. Previous Systems Review

The Under 15s Website:

<http://www.freekick.fsnet.co.uk/>

This site contains some basic information regarding the club, activities, results and sponsors. This suggests support for and the appropriateness of using an Internet based resource, because the site is still well-used by players. Increased functionality, sophistication and professionalism would be advantageous.



## DIRECTIONS

Basic Layout changes

Poulton Town u15s - Microsoft Internet Explorer

Address: http://www.freekick.fsnets.co.uk/about.htm

itteam dot net

Poulton Town JFC

How to find us. Directions.

M55 Start out at Junction 3 of the M55 from Preston

A585 Take 3rd Exit onto Fleetwood Road

Follow signs for Fleetwood

Through Espirk (Blue Anchor Public House on the Right) Follow A585

A585 Turn Left at traffic lights with Garstang New Road

(Windy Harbour Holiday Park straight ahead)

Position your vehicle to the right of the road

A585 Bear Right at traffic lights into Mavis Lane, Singleton Petrol Station should be on your Left)

Continue straight at traffic lights with A588 (Shard Bridge)

A588 At roundabout take 1st Exit into Breck Road, Poulton-le-Fylde

(River Wyre Public House on the Left)

Follow A588 until set of traffic lights

Turn Right into Parrys Way (Royal Oak Public House on the Left)

Public Car Park at the Rear

You Have Arrived At Your Destination.

Journey Time Approximately 10-15 minutes

Navigation bar disappears when moving away from homepage, meaning browser navigation buttons need to be used. No ability to get to homepage if arriving at page directly

Basic List of directions to ground, no visual representation or ability to specify start-point

## FIXTURES

Basic Layout changes

http://www.freekick.fsnets.co.uk/fixtures.htm - Microsoft Internet Explorer

Address: http://www.freekick.fsnets.co.uk/fixtures.htm

itteam dot net

FIXTURES

4<sup>TH</sup> DEC RIBBLE AWAY MEET 9.30  
11<sup>TH</sup> DEC PENWORTHAM AWAY MEET 9.30

Season 2005 /2006

Static content for fixture information

### 3. Strategy Analysis

Below is a profile how the new IS system is expected to contribute to the 6 points identified in the club's strategic development plan:

#### 1. player recruitment

Objective	Tactic	IS Relevance
<b>Increase awareness of the opportunities provided by Poulton Town FC</b>	Develop and implement annual marketing strategy that promotes and encourages club membership.	<i>Provision of a website will form part of this marketing strategy –use to advertise for new members, increase local awareness of club activities</i>
	Relaunch club web site - <i>Club Web site available and updated every month.</i>	<i>Proposed system to take the form of an online system with a website front-end</i>

#### 2. links with schools/TOP sport programme

Objective	Tactic	IS Relevance
<b>Appoint a Schools Liaison Officer.</b>	In consultation with the Wyre Football Development Group and club members identify a list of services and resources available to schools. - Provide a list of resources available to individual schools. These could include provision of qualified coaches and hosting key matches and competitions.	<i>By storing details of facilities and staff (including their qualifications) on the system, a list of available resources will be formed. Club may consider allowing access to the system for schools to query and utilise the club resources available online.</i>
<b>Become actively involved in the newly developed Borough Football Development Group.</b>	Club Development Officer to represent the club and disseminate information to members.	<i>Development of a central information resource will assist in the dissemination of information.</i>
<b>Support the coaching, selection process and management of girl (year 7/8/9) teams entering the Lancashire Youth Games.</b>	Deliver a programme of coaching sessions in participating schools prior to Lancashire Youth Games.	<i>System should assist in the development of effective ‘training (coaching) session templates’, based on an extensive base of appropriate drills and football theories/tactics</i>
	Oversee the management of a girls team entering the Lancashire Youth Games. - Undertake management responsibilities and attendance at the annual Lancashire Youth Games.	<i>System will support the activities and effective running of individual teams. This support can be translated to girl’s teams also to provide the same benefits. PTFC research suggests only 36% of club members are currently willing to assist girl’s team operations, but it is hoped an effective support network will increase this.</i>
<b>Improve coaching standards in school and PTFC.</b>	<i>No direct PTFC identified tactic specifically relevant to IS development</i>	<i>Through the introduction of a knowledge sharing resource to share and retain knowledge within the club and increase analysis of team/player performance, standards of coaching are expected to increase.</i>

<b>Through strong school/club links provide a range of activities to increase additional participation.</b>	Specifically target schools included in the TOP Sport Football Programme when delivering school based coaching sessions & holiday football camps.	<i>Allow such schools access to the system and the information it contains</i>
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### **3. staff and volunteer development**

<b>Objective</b>	<b>Tactic</b>	<b>IS Relevance</b>
<b>Understand current volunteer involvement and skills levels</b>	Undertake current Volunteer audit	<i>Documentation of staff members and associated qualifications/skills will assist in this and allow periodical review</i>
<b>Provide all volunteers with clear information and guidelines</b>	Develop and publish PTFC Volunteer Guide. Volunteers have access to a single source of data covering: Job opportunities, descriptions and standards required Training opportunities and Club support arrangements Child Protection awareness Club contacts	<i>Dissemination of information facilitated by introduction of the online system. Single source of static information can be distributed through website. Club contact available from database. Possibly provide personal information after log-on in a personalised page.</i>
<b>Provide Continued Professional Development for volunteers</b>	Agree individual CPD Plans with each volunteer	<i>Possibly provide personal information after log-on in a personalised page.</i>
<b>Raise profile of volunteers within PTFC</b>	Appoint PTFC Volunteer Co-ordinator (VCo)	<i>Provide profiles of club staff via website. Increase resources available (football knowledge database system unlike that available to other clubs increases profile of being a PTFC coach).</i>
<b>Improve Club Administration</b>	<i>No direct PTFC identified tactic specifically relevant to IS development</i>	<i>Computerised administration facilities to be provided as part of the information systems solution</i>
<b>Improve Coaching standards</b>	Meet FA Charter Standard &FA Development Club requirements - Level 1 coaches available at every junior and senior age group; Level 1 coaches available at every junior and senior age group	<i>Documentation of staff qualifications assisted by system, and sharing of knowledge acquired through training can be shared with other club staff and also retained if staff leave the club.</i>
	Identify, plan and support further training - Coach Training Plan developed	<i>As above</i>
<b>Increase Volunteer opportunities</b>	Promote and support opportunities for Referee training	<i>Provide Referee advice and training material via information system knowledge database and identify additional external resources for training and development.</i>
	Promote and support opportunities for FA Medical training	<i>As above for referee support</i>
<b>Raise awareness of football development with Youth Section parents</b>	Promote "Soccer Parent" -20% of Parents undertaken FA Soccer Parent course.	<i>Increase parent involvement through online facilities and provide additional information on such courses</i>
	Nominate a volunteer for the Lancashire Sports Awards in October each year.	<i>Collect nominations online and/or raise awareness through website</i>

#### **4. development of new teams**

<b>Objective</b>	<b>Tactic</b>	<b>IS Relevance</b>
<b>Establish additional teams at all levels</b>	Recruit Players and Advertise Introductory Event	<i>Promote via website</i>

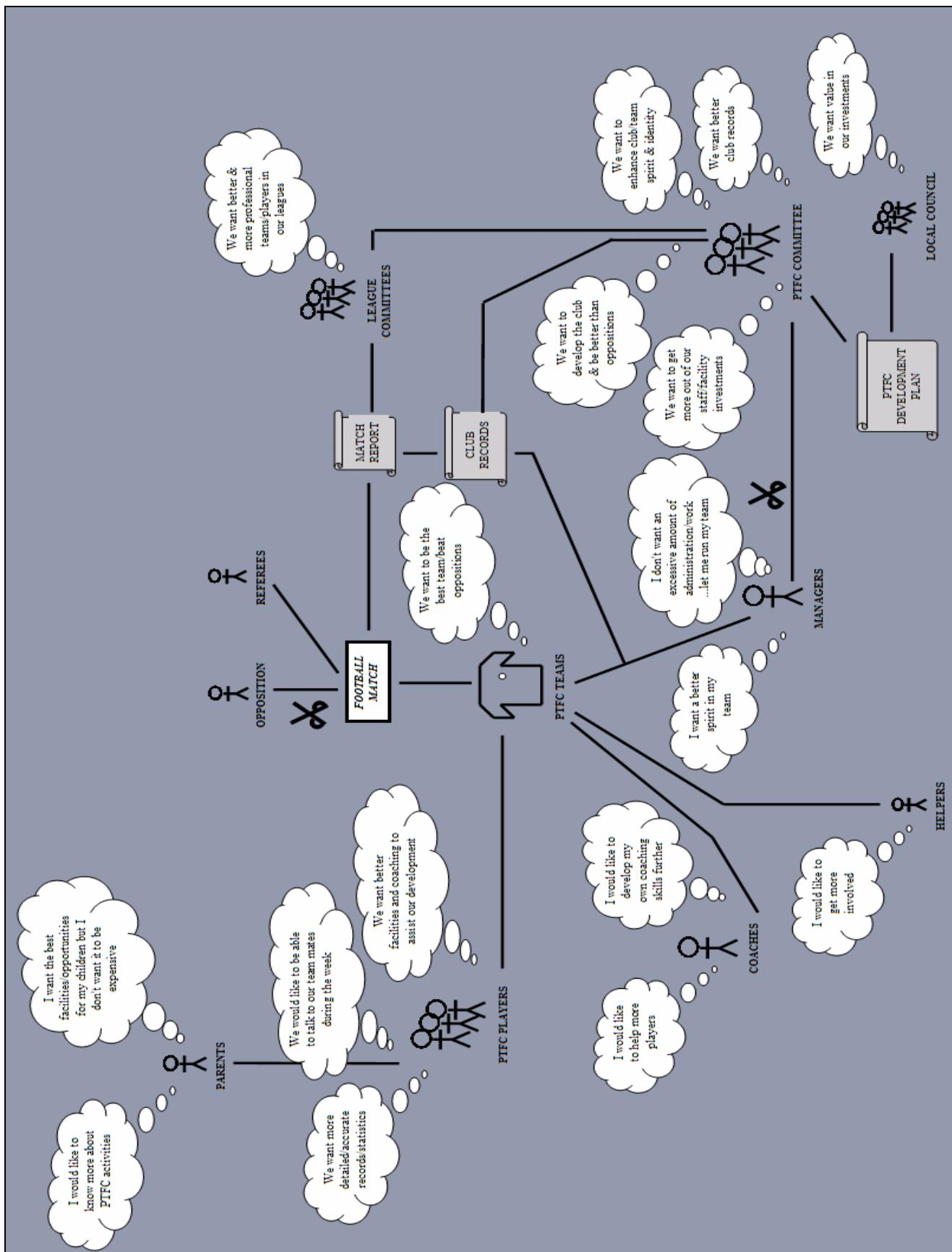
#### **5. exit routes**

<b>Objective</b>	<b>Tactic</b>	<b>IS Relevance</b>
<b>Establish additional Adult playing opportunities</b>	Create additional PTFC youth/adult male teams (formal & informal)	<i>Provide support and integrate into club spirit/activities for new teams via information system</i>
	Establish links with other local adult clubs & professional clubs	<i>Provide links via website and provide detailed history of player performance/abilities through records on system. Also enhance the standard of players offered to such clubs through use of system in player development during career at PTFC</i>
<b>Establish a portfolio of non-playing opportunities</b>	Develop a programme of training courses (e.g. Coaching, Refereeing, Club Admin., Sports medicine, etc)	<i>Facilitate this through knowledge stored on system, using drills, training plans, tactical knowledge etc.</i>

#### **6. monitoring and evaluation**

<b>Objective</b>	<b>Tactic</b>	<b>IS Relevance</b>
<b>Monitor and Evaluate Football Development Plan on a quarterly basis</b>	Record of achievement template produced to enable consistent recording of outcomes. Consolidate quarterly record of Achievement Reports for the AGM into an annual report and communicate effectively.	<i>Store template and history of evaluations on system. Publish annual reports online to increase audience.</i>

#### 4. Rich Picture



## **5. CATWOE Analysis –identifying and profiling stakeholders**

### **-Client/Customer**

#### **- Poulton Town FC** – players, managers, coaches, committee, parents

The club members who will use the proposed system. Managers and coaches will use the system to enhance the standard of club activities and increase their own abilities. Players will use the system to advance their own development. The committee will use the system to increase the efficiency of controlling the club and hopefully assist its development. Parents may use the system to increase their own level of participation in club activities.

#### **- Central League**

The central league will benefit from the proposed system because the standard of the team and players competing in their league will increase. This will also potentially increase the standard of their ‘central league team’ which competes against other leagues.

#### **- Opposition Teams**

Probable victims of the proposed system because the standard of Poulton Town teams/players is likely to increase.

### **-Actor**

#### **- System Developer (Stephen Brown)**

The system developer will be intrinsic to introduction of the new system, working with the club to design and implement the solution.

#### **- Poulton Town Committee**

A selection of committee members (representing the whole committee) are the primary contact point for the developer. It is they who will formulate the requirements and make decisions relevant to the project.

#### **- Players, Managers, Coaches And Parents**

As well as the committee, other members of the club will also be involved with the development of the new system, offering opinions, providing information and testing the prototypes.

### **-Transformation**

#### **- Poulton Town's club network infrastructure**

-information storage facilities

This will be changed from manual, unstructured storage to structured electronic storage

-information distribution facilities

These will be enhanced to include electronic web-based communication rather than just word of mouth, telephone and paper-based (postage)

-information/knowledge utilisation

This will be enhanced so managers and coaches can communicate better between themselves and also distribute their knowledge amongst more players

-communication facilities

Enhance communication between club members and to the surrounding communities (recruiting players, fund raising)

### **-Weltanschauung**

Surrounding this project is the assumption that better information storage utilisation and distribution will increase the efficiency and effectiveness of club activities, therefore aiding development of players and the club as a whole. It is also assumed that youth amateur football will continue to be a preferred pass-time/interest for both players and staff, and that the central league will continue to organise fixtures and oppositions. It is also assumed that all those wishing to access the system will have adequate means to do so.

### **-Owner**

- Poulton Town Committee

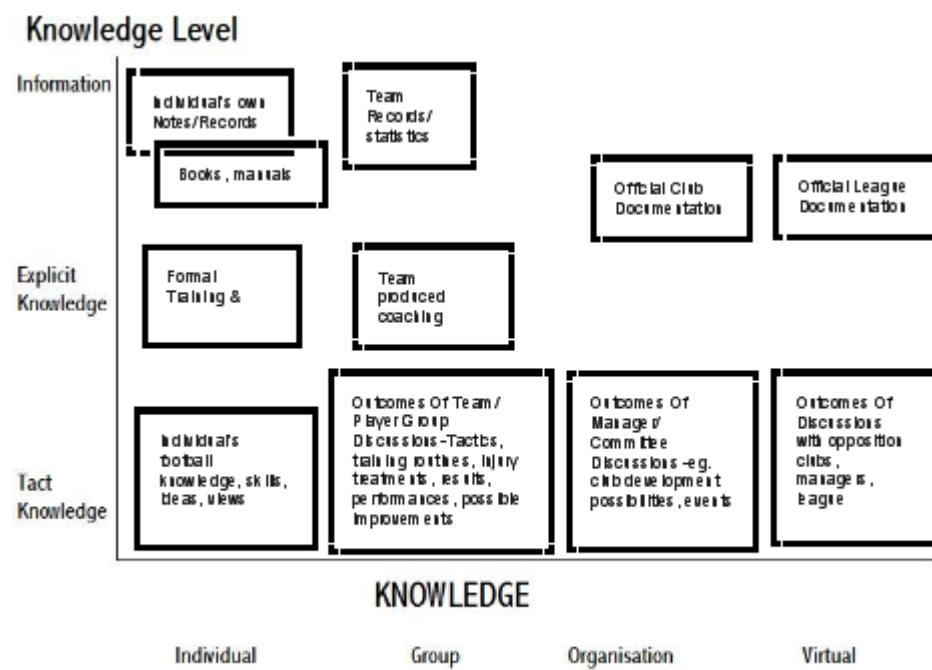
As 'benefactors' and overall controllers of the project/club, the committee own the project

### **-Environment**

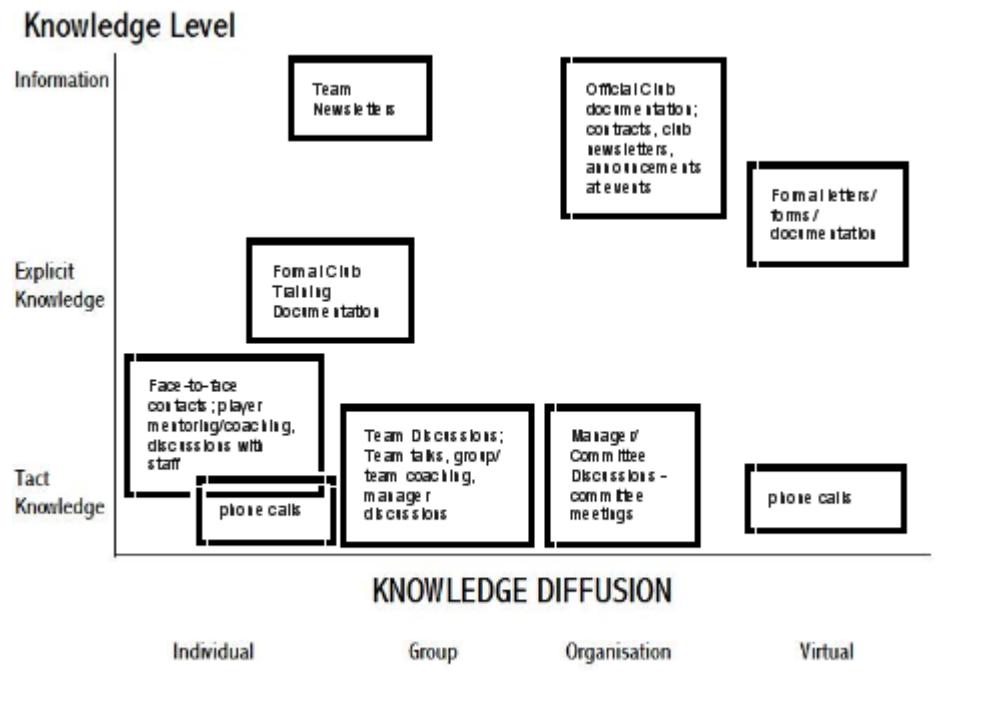
The proposed system will operate within the context of an amateur youth football club. The club competes in a central league against other such teams, with fixtures being arranged. The local Council provide facilities and funding to the club (along with the club's own funding collected through donations). The club are covered by directives from the FA and laws regarding child protection.

## 6. Knowledge Maps

Map of the current knowledge owned by PTFC:

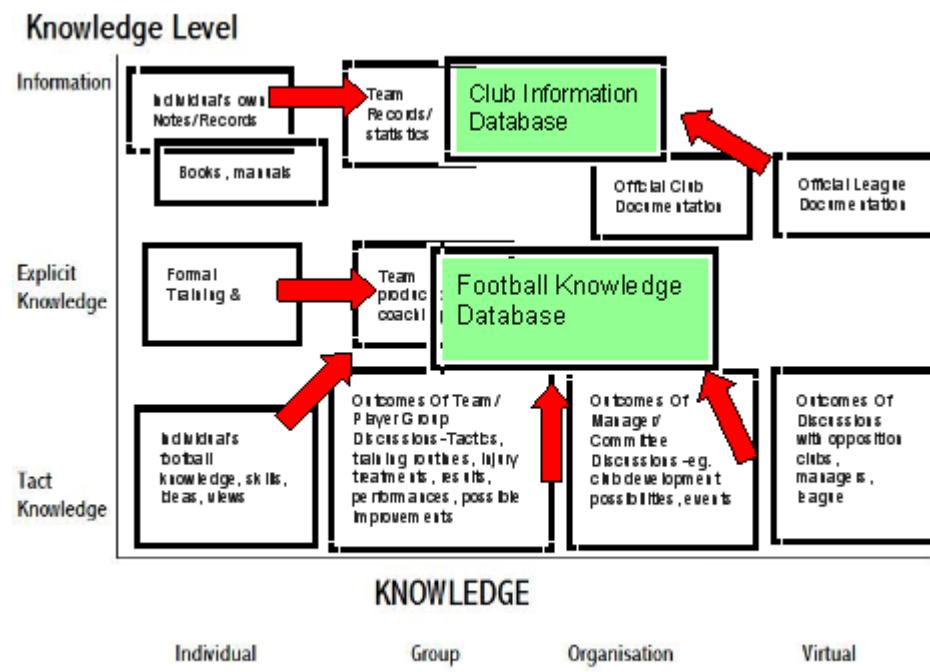


Map of the current knowledge distribution methods within PTFC:



### Desired owned knowledge model for PTFC:

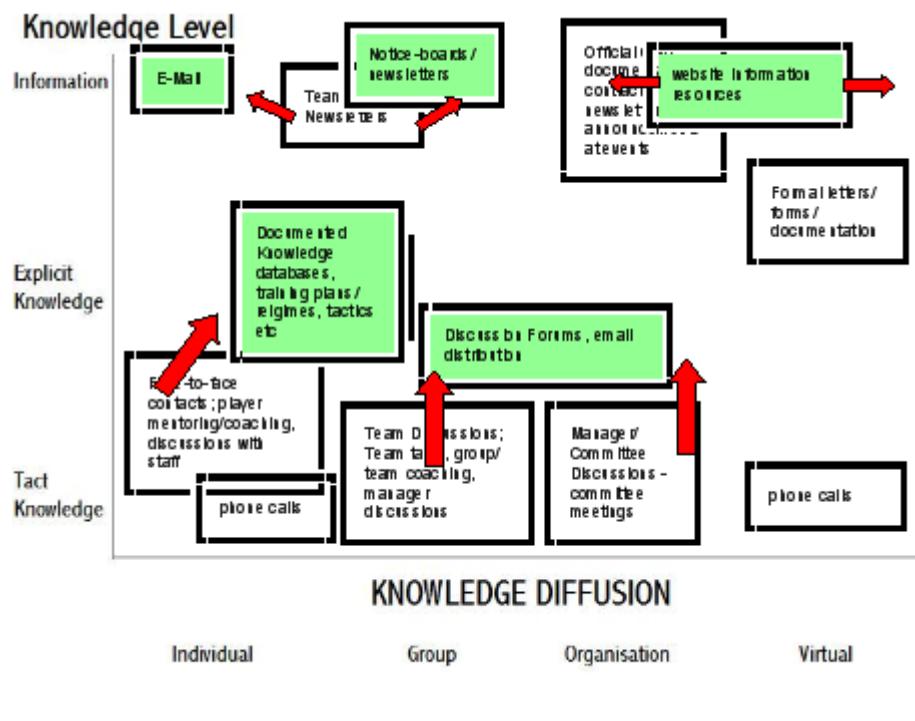
The club would like to create a centralised storage area for club ‘information’ records to allow easier control and utilisation. They would also like to attempt to turn the large amounts of tacit information held by individuals (players, managers, coaches), groups (teams, goalkeepers, psychologists), the organisation (club as a whole) and virtual sources (external to the club), into explicit, documented information. This will allow better use, making the knowledge tangible and durable.



### Desired map of knowledge distribution within PTFC:

PTFC wish to develop the mediums (methods) via which knowledge is distributed. Currently information is distributed within the club via paper newsletters. These are printed on an irregular and occasional basis and are generalised for the whole club. PTFC wish the new model to include additional mediums which will provide a more versatile (targeted information), convenient (increased regularity) and efficient (reduced logistics/effort to print and distribute). I have therefore recommended the use of personal/group email/newsletters and e-notice-boards for individual and group (team) distribution. For widespread information distribution (entire club and externally), additional website information posting has been recommended, allowing increased visibility to the large numbers of people at reduced complexity (maintaining distribution lists etc).

The club also wish to encourage the large volume of knowledge, to be distributed more through explicit mediums. By making the information durable and viewable to appropriate individuals it is envisaged that retention and re-use of the high-value tacit information held and distributed by the club, will be increased.



## **Appendix E –Information Analysis**

### **1. Functional Requirements**

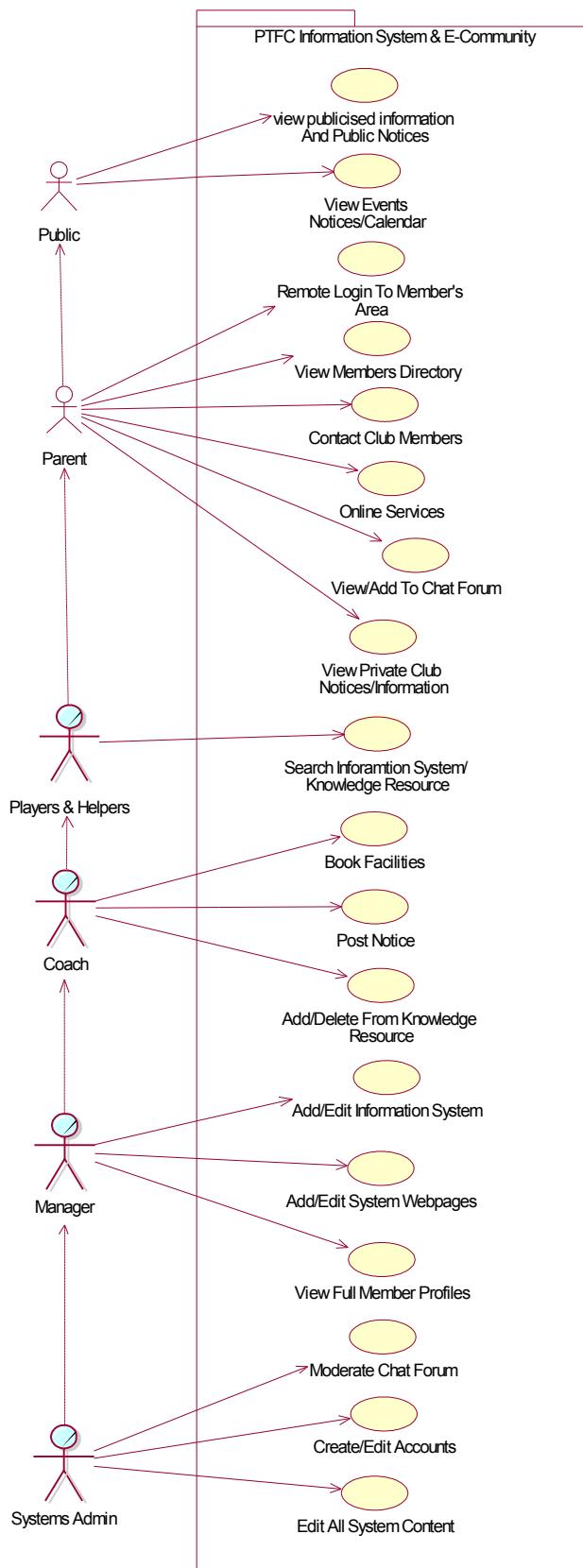
#### **Poulton Town Football Club – System Requirements**

Priority 1 = *Must Have* (*vital to success -must be implemented*)  
Priority 2 = *Should Have* (*very important -likely to be implemented*)  
Priority 3 = *Could Have* (*would be advantageous –implemented if resources are available*)  
Priority 4 = *Wont Have* (*will not be implemented*)

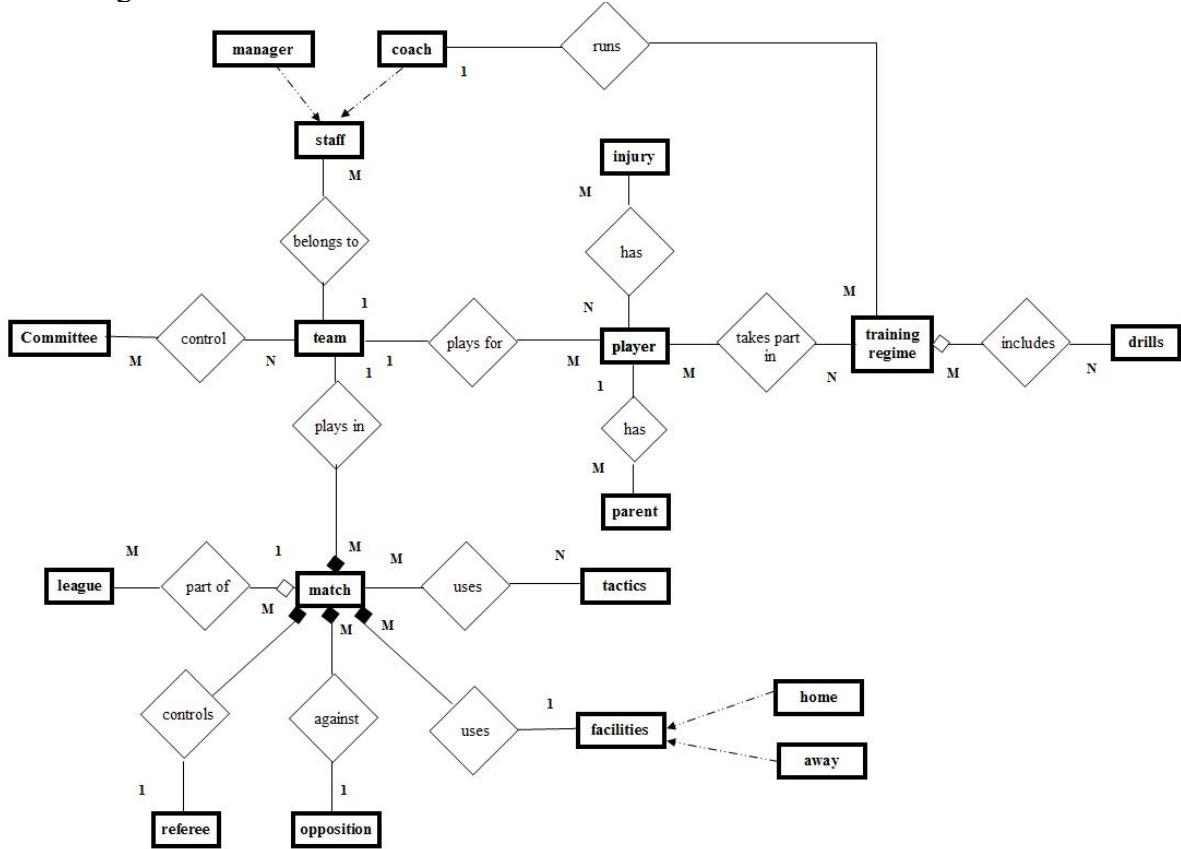
- |   |            |
|---|------------|
| 18. Website to display club information                         | Priority 1 |
| 19. Secured members area –usernames + passwords                 | Priority 1 |
| 20. Display secure club information, inc team pages eg. notices | Priority 1 |
| 21. Database information store for - fixtures/match information | Priority 1 |
| - member details  | Priority 1 |
| - tactics/training knowledge                                    | Priority 1 |
| 22. Chat forum for club members                                 | Priority 2 |
| 23. Identify And Contact Key Club Members                       | Priority 2 |
| 24. Member Directory  | Priority 2 |
| 25. Online services   | Priority 2 |
| - allocate/book facilities                                      | Priority 2 |
| - get directions to games                                       | Priority 2 |
| - match/training weather  | Priority 2 |
| - pledge donations  | Priority 3 |
| - vote  | Priority 3 |
| - indicate if available for game                                | Priority 3 |
| 26. Events Calendar   | Priority 3 |
| 27. Website Feedback Facility                                   | Priority 3 |
| 28. Club Administration Functionality                           | Priority 3 |
| <hr/>   |            |
| 29. Newsletter Distribution Facility                            | Priority 4 |
| 30. Real-time Chat  | Priority 4 |

## 2. UML Modelling

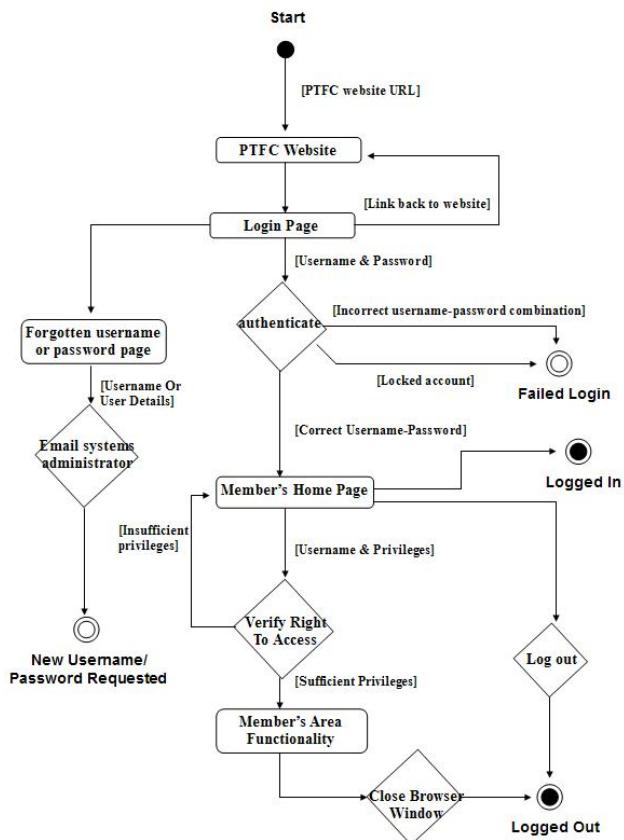
Use-case Diagram:



### Class Diagram:



### State Diagram:



### **3. Security Report For PTFC**

#### Computer Security Considerations Report For PTFC

##### **A. Components of computer security:**

###### **-Confidentiality – prevention of unauthorised disclosure of information**

Secrecy has always been an important part of security and covers preventing unauthorised users from ‘learning’ (often ‘reading’) information. Computer security research/development has focused heavily on this area, mainly due to the fact that the associated issues are often not replicated in traditional physical security.

###### **-Integrity – prevention of unauthorised modification of information**

Integrity essentially develops the concept of confidentiality to cover not only unauthorised reading of data, but also unauthorised writing (modification). However integrity issues can be extended to cover the prevention of unauthorised procedures (either manual or automated). It may be that data modification is permitted, however it is important to ensure this is done in the correct/appropriate way, so as not to de-value, erase or corrupt it.

###### **-Availability – prevention of unauthorised withholding of information/resources**

It is important to ensure that “a product’s services are accessible when needed and without undue delay”. This usually involves preventing a malicious attacker from preventing legitimate users from having access to their system, however availability may also be reduced due to inappropriate system implementation causing the system to become unavailable/unusable ie. non-malicious.

###### **-Accountability – information must be kept to ensure actions which violate security requirements can be accurately traced.**

The first three factors relate essentially to ‘access control’ and the prevention of undesirable events. However it is unfortunately inevitable that sometimes such events will occur, through either authorised and unauthorised actions. Consequently it is important that ‘users’ are held responsible for their actions. This is generally done by ensuring a system identifies and authenticates all users (through usernames and passwords), often maintaining an audit trail of actions.

##### Findings:

Confidentiality and Integrity will be vital. This will ensure both the accuracy and privacy of stored information. Availability is important, however because of the non-critical nature of the system to club operations, some compromises are acceptable in relation to cost of implementation. High availability will however be advantageous in ensuring effective adoption of the new system by members.

Accountability is a desirable trait, although its importance will depend upon which part of the system is being accessed. The lack of possibility for fraudulent activity means resources can be spent better

elsewhere than implementing audit trails. Usernames and passwords with restricted accessibility should provide adequate functionality.

## B. Access Control

Access to systems is generally controlled by attention to the following:

### - **access models** -people/roles, subject/objects etc

This involves the creation of a model to represent the organisation and the system/information available, including who is authorised to read/write what etc. It is then possible to apply this model to the system to control security. For Poulton Town this will involve profiling the club members/any other users of the system, and what information/services they will need to read or write. A key concept to be considered is that of 'Least Privilege' ie. processes (or users) should operate with no more privilege than is required. This means not permitting more rights than are necessary. Players will therefore only be granted the right to read statistics/match reports, since they have no need to add/modify them. Only managers/coaches will be allowed this right. The concept of 'Role Based Access' assists this. Users of the system are grouped under generalised 'roles' eg. player, manager, with each role having its own access model. This reduces the complexity involved with defining individual access privileges to each separate user.

### - **access tokens** -passwords, IP addresses, biometrics etc

These are the methods through which users are able to identify themselves to the system and verify their right to access. For Poulton Town, practical considerations mean this is mainly likely to be through allocation of usernames and passwords which can be recognised by the system and used to control access.

### - **access management** -password control, PKI

This is the ongoing activity associated with maintaining security. For Poulton Town it is likely to mainly cover the business processes designed to ensure effective account management ie. changing of passwords etc.

### Findings:

Once these features have been considered and security features implemented into the system, it is also important to ensure that security forms a part of the system testing. The implemented security should match the security policy designed for the system ie. a user/process should be able to do what they are authorised, and no more. Further to this, if security breaches are encountered/barriers met, the system should 'degrade gracefully and safely' ie. display appropriate information to the user and then close in a way which ensures the integrity and security of the rest of the system/data. In order to ensure maximum security, a wide range of defence strategies should be implemented (supported technically and through business processes). Doing so increased the breadth and depth of security and reduces the likelihood of breach. The concept of minimal privilege should also be used to grant no more access rights than are required.

### **C. Security Risk Analysis**

Risk analysis involves estimating the level of threat posed on a system. For Poulton Town the overall level of threat is relatively low. Much of the information stored on the system relating to players and staff would not be valuable to external parties. The player/club statistics/match reports would also be of little value and can mostly be obtained from tabloid sources. The information relating to tactics/training and manager comments on other teams may be of some use, however the risk/effort is likely to outweigh the potential benefits. Consequently the level of system security will be balanced against the cost and usability implications it generates.

Risk from computer hackers (who want to gain access to computerised systems), is likely to be low. There exist few individuals/organisations eg. GreenPeace, who are likely to want to steal Poulton town's data or deny access to their system. The biggest threat comes from opposition teams. However the risk/effort associated with hacking into the system is likely to outweigh the advantages to be gained (no profit). Further more it is likely the technical skills of such individuals will not be adequate to pose a serious threat to the system. Processes put in place by the club to maintain the confidentiality of access should be adequate.

## 4. Data Protection Act Report

### Data Protection Act Report For PTFC

#### *Sources Consulted:*

- *Edwards And Savage (1985) [1]*
- *Office Of Public Sector Information –Online Resource [2]*
- Public Services Information Centre [3]*

Consideration of the Data Protection Act 1998 is important because it imposes legal requirements on the storage of personal records. In order to be covered by the act, information must satisfy two criteria:

- “it must be in a form that can be processed by equipment operating automatically in response to instructions given for that purpose” – computerised databases fall into this category
- “it must be personal data, that is data relating to an identifiable individual”

Consequently, all information stored in the proposed system will automatically meet the first criteria. A large amount of the information to be stored does not relate specifically to individuals, therefore is exempt from the Act eg. team history, facility information, training regimes, tactics advice etc.

The act also states that “*club membership lists, and simple lists of names and address*” are not covered by legal requirement. [2] Consequently, simple lists of club players & staff, along with their contact information, are also not covered.

The club did however identify in their requirements the desire to store some information which could be used to identify individuals. Depending upon its content, information relating to player, referee, and opposition performance/history, statistics etc. may constitute ‘personal data’ (“data which relates to a living individual who can be identified from it”) [1]. Two categories of personal data covered by the Act:

- “factual data – eg. names, addresses, date of birth, salary etc”
- “judgmental data – expressions of opinion about an individual eg. player X is a good player”

Note: “intention data – data indicating the intentions of the data user with respect to the subject eg. we intend to send player X on a trial with a professional club” is not covered by the act, unless it represents an opinion eg. ‘Player X is good enough to become professional’, making it judgmental data.

It is clear therefore that both factual and judgmental data is to be held on the system, placing important responsibilities upon the club and system developer to ensure the laws are met.

Consultation with the Committee revealed the club are already aware of the laws surrounding the information they store. Gaining permission for the club to collect and store information relating to club activities (including its players), is consequently included as part of their membership contract. Because this is ‘club-collected’ data, it does not fall under the Data Protection Act. The Act clearly states “exemptions include: personal data held by an unincorporated members’ club and related only to the members of the club”. [2] It was decided after consulting the Act that information relating to opposition and referees should either not relate to specific individuals (opposition), or not include personal information other than that excluded from the act ie. simple names and addresses. (most specific alteration was the removal of ‘referee ratings’). A further exemption to the act is information collected/stored for journalistic reporting (media) purposes. Match report information could therefore be classed as such.

To avoid complications, the club state that they have always made any stored information freely available upon request, taking into account any dissatisfaction. They will ensure this remains the case when operating the computerised system. Consequently, provided it is used in the intended way, the information to be stored on the system does not fall under the requirements of the Data Protection Act. Despite this however, in order to avoid complications, consideration of the Act’s guidelines shall be considered so as to ensure the club operates a morally ‘fair’ system. The act specifies that the following should be met, so wherever possible the system will attempt to fulfil these criteria: [3]

- fairly and lawfully processed;
- processed for limited purposes;
- adequate, relevant and not excessive;
- accurate;
- not kept longer than necessary;
- processed in accordance with your rights;
- kept secure;
- not transferred abroad without adequate protection.

[1] Savage, N; Edwards, C (1985)

*A Guide to The Data Protection Act – Implementing the act (2<sup>nd</sup> Edition) – Financial Trading*

[2] <http://www.opsi.gov.uk/acts/acts1998/19980029.htm> - last accessed 02/02/2006

[3]

[http://www.direct.gov.uk/RightsAndResponsibilities/RightsAndResponsibilitiesArticles/fs/en?CONTENT\\_ID=10028507&chk=SJPKS](http://www.direct.gov.uk/RightsAndResponsibilities/RightsAndResponsibilitiesArticles/fs/en?CONTENT_ID=10028507&chk=SJPKS) - last accessed 02/02/2006

## 5. PTFC Project Risk Assessment Report

### Risk Assessment –Identify, Analyse & Prioritise:

#### 1. Total Project Failure (failed implementation)

LIKELIHOOD: LOW-MEDIUM

- a. Non-Professional System Developer Being Used: High – the project is being completed by a university student (may be lacking in technical or project management skills) as part of a final year project (may be more focused on getting a good grade rather than delivering an appropriate solution). Social and other academic activities may also detract from the time allocated to the project. A professional IS consultancy may increase the chance of success, however this would mean increased costs.
- b. Fixed Deadline: Med-High – The fixed deadline date (due to university project submission date) provides a strong constraint because the system implementation may have to be cut-short (requirements not included) in order to complete the project on time (as against a commercial project which could have its deadline extended). Fixed deadline may however increase motivation to finish on time.
- c. Single Developer: Med – Because the development team is only one person (student) effects of illness, lack of knowledge, skills, motivation etc dramatically increase the likelihood of project failure
- d. Motivations And Experience Of Student Developer: Low - The high motivation of the student (wants to get a good grade), reduces the risk. High previous module grades also demonstrates likely competence, while prior experience conducting IS projects will also be beneficial. The developer's experience and knowledge regarding amateur is another advantage. Motivation to obtain a good grade is also likely to be greater than the financial reward offered to a consultancy company.

IMPACT EFFECTS (on Poulton Town): LOW

- a. Time: Med– relatively large amounts of time will be required from the committee members assigned as the project team in order to provide requirements, evaluate designs/prototypes and test the system. Testing will also require further participation from other club members eg managers, players etc. The voluntary nature of this participation may also add further problems. However the committee intend to add it to the list of manager duties, and high motivation of members to develop the club should help reduce resistance.
- b. Club Activities: Low – the new system is a ‘luxury’ addition and is not vital functioning of the club. Failure to deliver a system would be identified as a missed opportunity to gain competitive advantage, but would have no detrimental effect on the club.
- c. Financial: Low – Monetary investment is extremely minimal throughout the project (cost of software and hosting the system). Further more most expense will be towards the end of the project when the club will be in a position to judge the value of the implemented system and analyse the cost-benefit balance of making the financial investment.

IMPACT EFFECTS (on Student Developer): HIGH

- a. Project Grade: High – Project success will relate to final degree grade so complete project failure would have a dramatic impact.

#### 2. Poor Quality Implementation

LIKELIHOOD : MEDIUM

- a. Fixed Deadline: Med – fixed deadline for project completion means quality is likely to be the first compromise.

- b. Lack Of Developer Skill/Experience: **Med** – Non-professional developer means gaps in knowledge/technical ability are possible, resulting in a solution which is not of appropriate quality.
- c. Utilisation and integration of advanced/unfamiliar technologies – **Med** – as well as creating the potential for an incomplete implementation, the use of advanced technologies/methods of which the sole developer has little past experience, means while the system may be ‘complete’ it may not be of adequate quality.

IMPACT EFFECTS (on Poulton Town): **HIGH**

- a. Disclosure Of Club Information due to inappropriate security/design: **Med** – No legal implications but loss of competitive advantage if information given to opposition. May have disruptive effect if management/committee information disclosed to other club members.
- b. Poor Quality System Being Used: **Med** – attempting to use a poor system may result in data corruption, loss etc, negatively affecting motivation of members to use the system and increasing their work-load, detracting from their focus on footballing activities.

IMPACT EFFECTS (on Student Developer): **MEDIUM**

- a. Project Grade: **Med** – Once system has been evaluated and submitted, functionality/performance of the system will be of minimal concern. Attaining a high grade will be assisted by a high-quality implementation, however the potential exists to produce a system which attains a high grade without necessarily producing a system as required by PTFC.

### 3. Project Schedule Over-Run / Incomplete Implementation

LIKELIHOOD : **HIGH**

- a. Other commitments for developer: **High** – coursework deadlines and exams may prevent the developer from keeping to the schedule, while mismatch of availability between stakeholders and developer in order to communicate/review/ test/evaluate may cause problems.
- b Fixed Deadline: **Med** – no flexibility on delivery date puts great pressure on schedule and deadline attainment.
- b. Large-scale of project – **Med**- the large number of activities to be completed and the large size and complexity of the entire project mean the flexibility inherent in the project creates a relatively high potential for non-completion.
- c. Utilisation and integration of advanced/unfamiliar technologies – **Med** - attempting to use advanced technologies/methods of which the sole developer has little past experience creates the potential for not being able to deliver a complete solution ie. implement all the features/functionality required by the system.
- c. Lack Of Developer Project Management Skill/Experience: **Med** –increases the likelihood of failure to keep to schedule.
- d. Single person development team: **Med** –reduced risk in that less control of project team members required, however reduction in resources and flexibility/skill may be a problem.

IMPACT EFFECTS (on Poulton Town): **LOW**

- a. Reduced Benefit: **Low** – ‘luxury’ nature of the system means lacking complete functionality would have limited effects.

IMPACT EFFECTS (on Student Developer): **HIGH**

- a. Project Grade: **High** – failing to keep to the schedule may result in a large amount of work to complete at the end of the project. This may become unmanageable with chances of gaining a high grade being considerably reduced. However, providing the system meets minimum requirements, impact will be minimal.

## **Risk Control Measures –Reduce, Contingency Plan and Monitor/Control:**

### **1. Total Project Failure (failed implementation)**

Effective and regular communication between developer and PTFC project team will be conducted to ensure the project is progressing as required. Regular meetings with project supervisor and deadlines for deliverables set by the university will also help ensure progress is adequate.

### **2. Incomplete Implementation**

Adopt a phased implementation approach, utilising evolutionary prototyping. This will allow progression towards a complete system rather than attempting to develop an over-ambitious complete system immediately and consequently failing to meet minimum requirements.

### **3. Poor Quality Implementation**

Ensure thorough analysis and design phases, based on complete research to identify the most effective and appropriate tools/techniques. Ensure continual involvement of end-users by encouraging regular and effective communication. Thorough reviews of designs and prototypes will be done by the end user to ensure requirements have been met. Testing by both the developer and end-users will allow for thorough and in-depth evaluation of system quality.

### **4. Project Schedule Over-Run**

Creation of effective schedule plans – Gantt Chart – facilitates continual progress monitoring. Clearly defined deliverables and review points at important points in the development process allow for re-evaluation of project progress, at which point problems with delay can be rectified by modifying the Gantt Chart. In the event of serious over-run occurring, flexibility time has been built into the schedule following the implementation/testing phase. In addition, the four week Easter break which occurs towards the end of the project will allow the potential for additional time to be spent on the project during that period.

## **Appendix F –Design**

### **1. Evaluation Of Database Technologies**

#### **Justification For The “Relational –Database” Approach**

Although alternatives exist eg. hierarchical/network models, a relational approach was evaluated as most appropriate for this project.. Not only is it the currently ‘preferred’ approach to database organisation, but it also utilises logical ‘tree-structures’ and fits well with the object-oriented design approach adopted in the methodology. My considerable experience with relational database designing is also a relevant consideration, as is the wide availability of relational database technologies. SQL, as a relational architecture, is also highly recommended for distributed client-server information systems because of its non-procedural nature. This means it is simply possible simply to specify what data is required from the database, rather than the procedure required to actually retrieve it. The ability to ‘parallel’ queries also increases the retrieval capability of the database ie. complexity of queries. The statistical reporting/summarising requirements indicated by PTFC mean this could be extremely advantageous. The compromise of a relational approach is usually a potential for slight decrease in performance compared with other approaches. This is however likely to be negligible given the relatively small volumes of data. Further more, because retrieval speed of access is not a system-critical performance objective, this can be over-looked.

#### **Evaluation Of “Off-The Shelf” Packages**

‘Off-the-shelf’ packages reduce the amount of coding required by providing a convenient user interface so as to allow databases to be developed quickly and efficiently (often at lower cost). Sometimes it is necessary for compromises to be accepted in terms of functionality offered, although most recent versions of such software have powerful facilities and allow developer coding to be added to the implementation to fine tune the database. Further to this, because off the shelf packages are commercial products released by software companies, the basic underlying functionality of the databases has been subjected to extensive testing and development. It is also likely that a considerable amount of supporting literature will be available to assist development. Potential off the shelf packages identified as appropriate to this solution are MS Access and FileMaker Pro. These are not the only examples, however they were chosen for consideration because of their good reputations/pedigree, quality supporting literature and orientation towards Internet-based usage. I also have previous experience creating databases with both packages:

-Microsoft Access – Numerous versions of this product exist and because it is distributed as part of Microsoft Office, many small businesses use it to implement basic databases. A particular advantage of this suite is that it can be integrated with other Microsoft applications such as Excel, Word and Outlook. This could be particularly useful given the requirement for facilitating club administration

(finances), creating invoices etc. The inclusion of an incarnation VisualBasic allows users to create macros so as to perform small programmable tasks. SQL querying also allows effective querying. New versions of Access also allow integration with Macromedia Dreamweaver and Coldfusion, thus enabling creation of a complete three-tier website with assistance from development software (html and server-side coding).

Avison et al (2002)<sup>[1]</sup> however stresses the fact that MS Access was originally created as an end-user database. Although it is able to support around 10 simultaneous users, it is not recommended as an industrial-strength database server for the Internet. Consequently MS Access is only recommended for use during the prototyping phases to allow rapid system generation, not as part of the production system. It is however important to note that MS Access 2003 is supplied with ‘an up-sizing wizard’ to “allow the database tables to be migrated to Microsoft SQL Server for use in a production environment”

FileMaker Pro – has the advantage that it is purposely geared towards Internet usage, with features provided to allow rapid publication to the web. Further more it has an extremely effective interface design tool. This allows the creation of extremely appealing user-interfaces. Unlike Access it is also compatible with Apple Mac users, increasing accessibility to the system. Despite this however, the tool’s specification<sup>[2]</sup> clearly states that FileMaker Pro is still only able to handle a maximum of 5 simultaneous users. Like Access therefore it is only intended as a quick/easy way of implementing Web-databases for low-load systems.

### **Evaluation Of Bespoke Applications**

In contrast, a bespoke database could be created using MySQL. Rather than using an off-the-shelf package such as MS Access to act as an interface and create the database code automatically, MySQL would require explicit manual creation of the SQL code required to form the database tables, relationships etc. While this less ‘user friendly’ approach (since greater expertise is required) often discourages non-programmers, in the commercially it is often the preferred option. MySQL databases are far more robust than their MS Access equivalents. They are able to support far more simultaneous users. MySQL is also identified as a reliable platform on which to implement an effective chat forum, a context when simultaneous user support is key. The intended use of server-side technology to retrieve information from the database also negates the advantages provided by the additional functionality of MS Access (querying power). MySQL is also open-source, reducing costs dramatically because licences do not need to be purchased.

<sup>[1]</sup> Avison, D et al (2002)

*Developing Web Information Systems – Butterworth-Heinemann*

<sup>[2]</sup> <http://www.filemaker.com/products/fmp>

## **2. History Of Database Technology Decisions**

### Decision To Use Microsoft Access –Conclusion Of Mid-Term Report

For this project an off the shelf package is likely to be the most appropriate approach. While the information the database is required to store may be relatively simple, quite extensive functionality is required by Poulton town to use the information. Using the built in features of an off the shelf package would therefore prove most beneficial. Further more, the rapid development time required for this project also fits well with an off the shelf base. Utilising software which allows relatively easy development and enhancement would also be extremely advantageous in meeting Poulton Town's requirement to have a system which can be developed further at a later stage by a person with semi-technical skills. Utilising a method which relies upon heavy low level coding and good relational database theory would not be advisable in meeting this requirement..

### Subsequent Decision To Use MySQL

The decision was therefore made to implement the database using MySQL. This differs from the approach apparently adopted in the mid-term report. See appendix. The reason for this change was based upon a re-evaluation of the user requirements and technologies available. While an off-the-shelf package would provide numerous advantages eg. rapid development time, good functionality, it was decided that the robustness offered by an SQL database was a key advantage. MS Access's poor handling of simultaneous users (maximum of 10 before crash becomes likely) would be a fundamental flaw in the system given the large number of users (approximately 400 club members) likely to be accessing the database during high-demand periods eg. Saturday before matches and Sunday evenings after matches. Experience gained with MySQL in the SY23 module is also likely to be helpful since it reduces the time required to learn new skills before implementing. It is also likely to reduce the chance of errors/poor implementation technique.

### 3. Evaluation Of Server-Side Technologies

#### Report To Evaluate Server-Side Technology Options

##### - PHP

...is a very popular language, implemented on approximately 18.5 million websites according to McBride (2005)<sup>[1]</sup>. This has a number of implications, most notably it implies the language is well tested and reliable. Further to this there is also a large resource network available, in terms of literature and fellow developers who are likely to provide assistance. The combination of PHP and MySQL is a particularly well-proven approach, adopted by many and recommended by a wide range of literature sources as an effective production-standard implementation. McBride (2005) describes a “lovely shallow learning curve”, with an intuitive syntax and a large base of ‘pre-defined functions’ which “allow complex functions to be performed without the need to write complex code”. PHP’s additional open-source nature and platform independency make it a very attractive option.

##### - Coldfusion

...is another widely used server-side technology. In their ‘training from the source’ guide, Schmidt and Weiss (2003)<sup>[2]</sup> highlight similar advantages to those claimed for PHP. The language is advocated for its “simplicity and ease-of use” which allows rapid application development. It too is open-source and platform independent. A particularly appealing feature of the language is that like (X)HTML, it is based on the use of tags. This allows apparently seamless integration into (X)HTML documents. Straight-forward names and attributes are also suggested to make code easy to write, and understand by future developers. This could prove extremely beneficial given the requirement to make the system suitable for future development. An initial read of the Schmidt and Weiss guide to Coldfusion suggests a more intuitive approach to coding than PHP. PHP is far more representative of traditional programming code than Coldfusion, who’s ‘HTML-like’ tags create a far less daunting proposition, especially for a future developer unfamiliar with the language. Macromedia also highlight the fact that less lines of code are required than for PHP or ASP. In addition, because Coldfusion is database independent (it can connect to any ODBC database), restriction is not imposed on the type of database used in future developments. Support for multiple data-sources, based on differing database technologies would for example allow club members with limited technical ability, to implement MS Access databases and link them to the system. PHP is highly restrictive because it is unable to operate with databases other than MySQL. The ability to quickly implement relatively high-functioning (roll-based) security and page-content variation as part of webpage is also a huge advantage of Coldfusion.

<sup>[1]</sup> McBride, N (2005)

*PHP with MySQL -Contemporary Books*

<sup>[2]</sup> Schmidt, K; Weiss, N (2003)

*Macromedia Coldfusion mx training from the source -Macromedia Press*

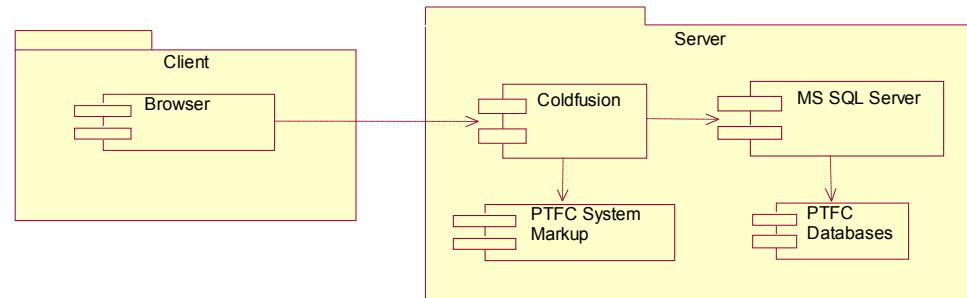
Also, because Coldfusion queries databases by passing standard SQL statements (enclosed within tags), it would be possible to develop advanced querying and reporting functionality quickly using my past SQL training. This approach also makes the technology extremely fast and scalable.

- ASP

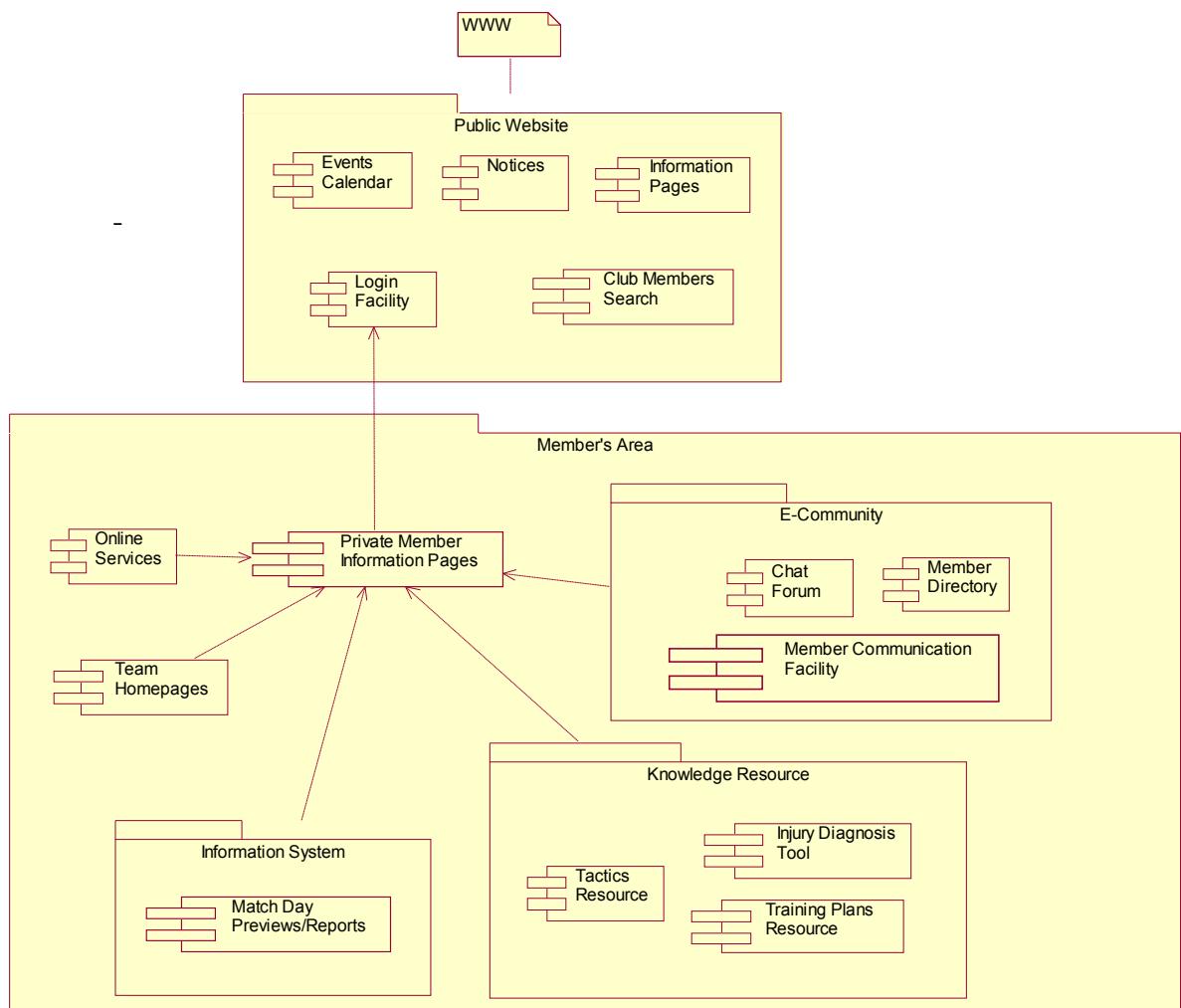
...offers a further alternative language option, however it was quickly dismissed. As a Microsoft product it has numerous inherent problems, namely because it is neither open-source or platform/database independent. Licence fees would incur additional cost, while heavy restrictions would be placed on compatibility. ASP requires either Microsoft Internet Information Server or Personal Web Server to run.

## 4. UML Modelling

## Deployment Diagram

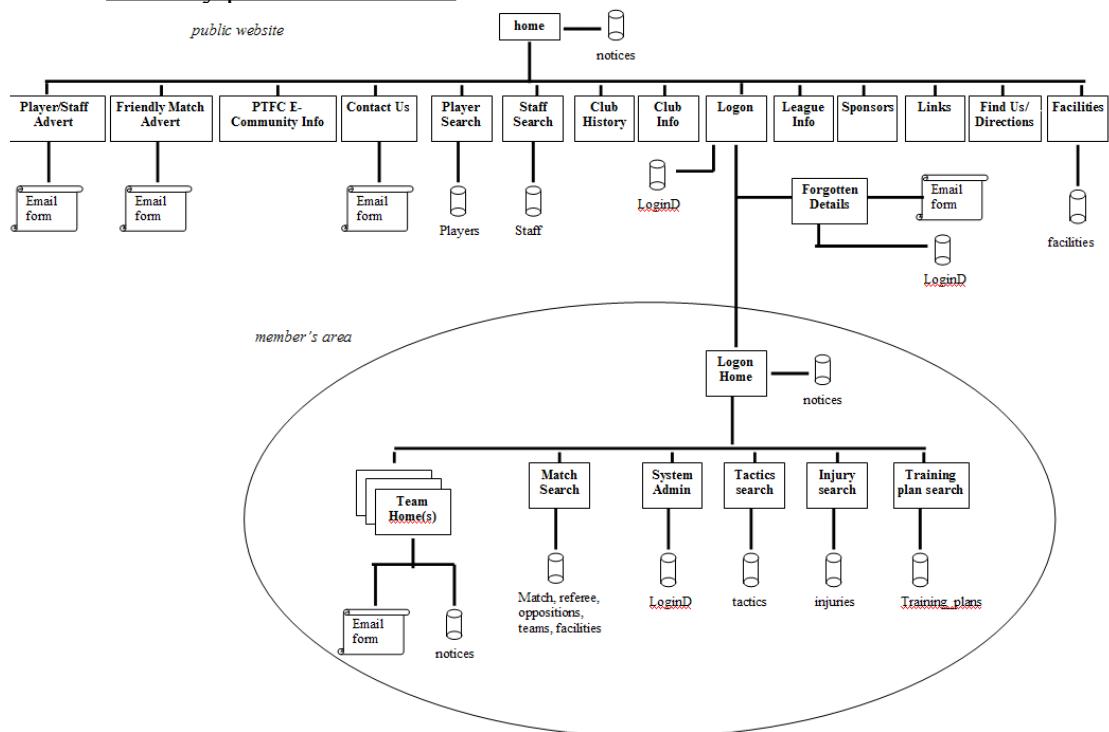


## Component Diagram

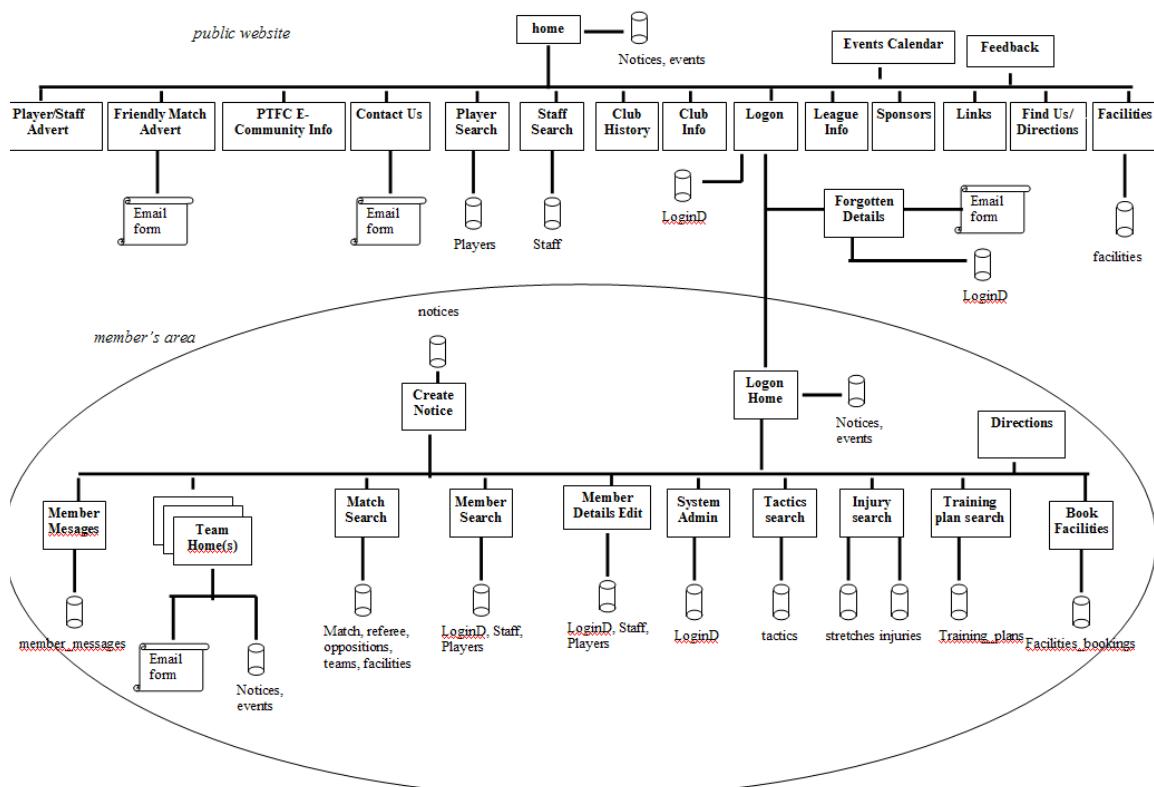


## 5. System/ Site Structure

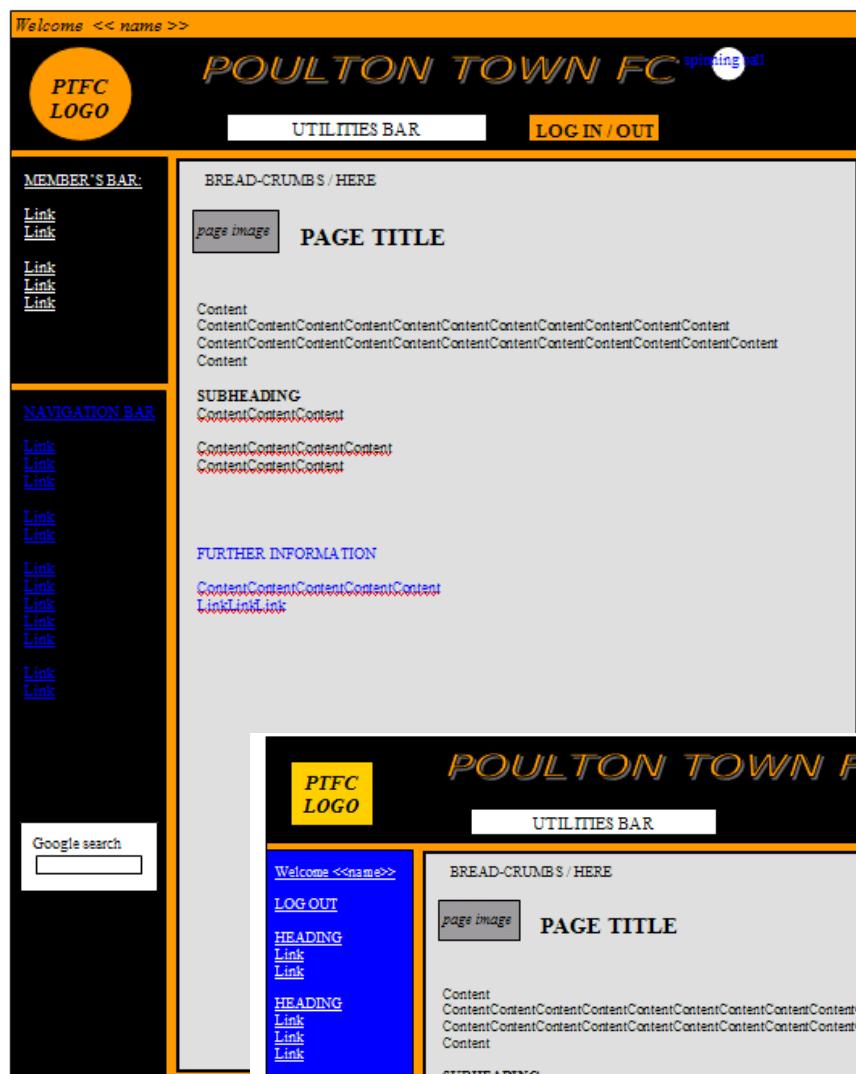
-Initially planned structure:



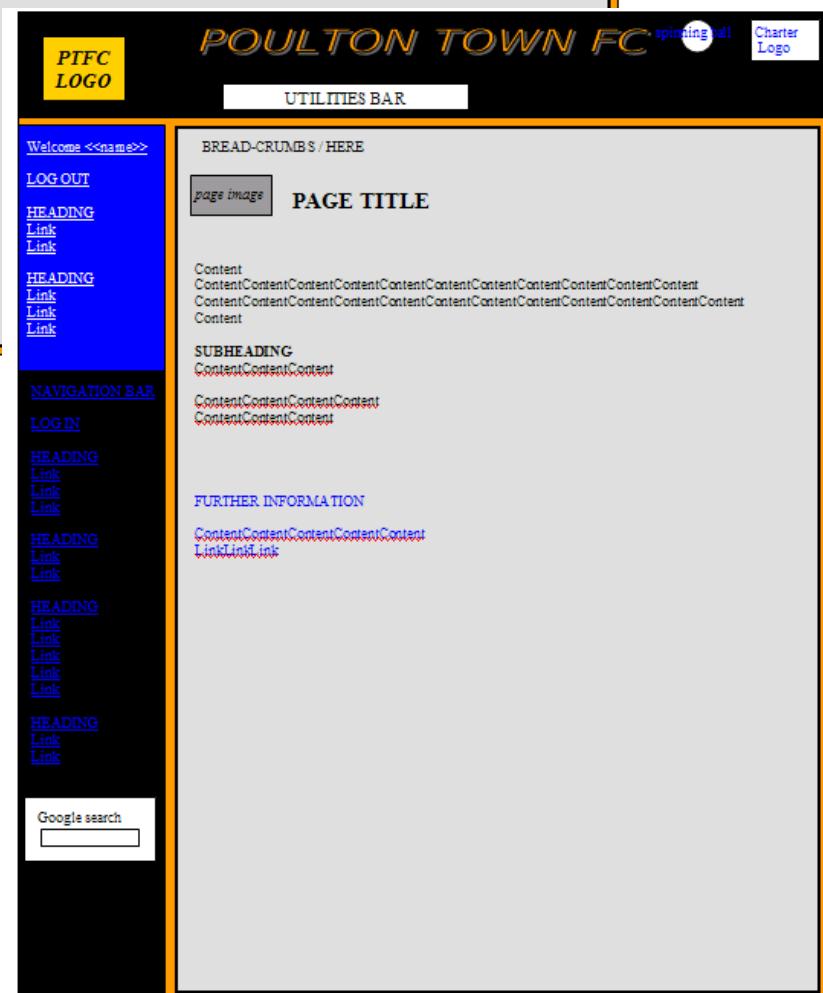
-Revised Structure:



## 6. Page Design Mock-Up



Following review by  
PTFC, this was refined to:



## 7. Further Design Decisions

### Graphics

Gif (Graphic interchange format) will be used for simple images and animations because high compressions makes files very small, reducing download time dramatically. Jpg (Joint Photographic experts Group) and png (portable network graphic) will be used for larger coloured images such as photos. Where possible png will be preferred as it is an open-source standard recommended by W3C. It is recommended by Neilson (2000) [1] that graphics should always be included for a specific purpose and should assist in the communication of information. Using graphics for decoration can dramatically increase the visual appeal of a site, however should not be used simply to fill space because they add clutter and increase the time the page takes to load. Taking these guidelines into account, the policy adopted for inclusion of graphics was ‘quality not quantity’, especially for decorative purposes. The visual queues provided by graphics can also assist users in understanding and remembering what a particular page/button does. Consequently small graphics are used for key buttons such as ‘home’ and small icons are included next to page titles (providing a visual interpretation of the title). During implementation it will be necessary to ensure all included graphics are appropriate in size, scale and content, depending on their purpose. PTFC have made available a range of logos and photos/graphics for use. These will help improve visual appearance since they will identify the system as PTFC-specific rather than simply a generic ‘purchased’ package.

*Dynamic Content/Interaction:* JavaScript facilitates ‘rollover’ buttons (used on menus) which change in appearance as the cursor moves over them. They are used because of their positive impact on visual appeal and to usability (identify what can be/is selected). Animated graphics eg. a spinning ball or logo, are also used to the perception of ‘quality’ and ‘complexity’. In his book on website usability Neilson (2000)<sup>[1]</sup> however warns against excessive use of animated graphics because they can be distracting. Such graphics are therefore used sparingly and only where they can be justified.

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<sup>[1]</sup> Nielsen, J (2000)  
*Designing Web Usability. (New Riders Publishing)*

## 8. Database Design: Normalised Data Structure

### A) Un-normalised Data Structure:

member details (name, address, contact information, emergency contact, date of birth, login details, experience, qualifications, team, player attributes, staff role, goals scored, matches played, ratings, moms, yellow cards, red cards, performance notes, username, password)

match (player statistics, date, opposition\_opposition\_name, opposition\_kit\_colour, opposition\_pitch\_id referee name, referee contact, match\_pitch, ko\_time, meet\_time, pre\_match\_notes, tactics, formation, kit, manager\_comments, match\_report, team\_rating, score, home\_away, mom, match\_notes, team name, kit\_colour\_home, kit\_colour\_away, away pitch, pitch\_postcode, pitch\_name, pitch\_notes)

facilities (ground\_name, address, pitch\_description, notes, changing\_facilities, postcode, home\_or\_away)

training\_plans (area\_of\_focus, intensity, age\_range, content, overview)

tactics (area\_of\_focus, content, overview, summary)

### B) Normalised Data Structure:

player (player\_id, team\_id, position1, position2, preferred\_foot, other\_clubs, PTFCusername, current\_player)

staff (staff\_id, team\_id, primary\_role, secondary\_role, current\_staff, past\_experience, qualifications, notes, PTFCusername)

player\_match (player\_id, match\_id, goals\_scored, rating, YC, RC, assists, notes, squad\_number)

matches (match\_id, team\_id, match\_date, opposition\_id, referee\_id, pitch\_id, ko\_time, meet\_time, pre\_match\_notes, tactics, formation, kit, manager\_comments, match\_report, team\_rating, ptfc\_score\_HT, ptfc\_score\_FT, opposition\_score\_HT, opposition\_score\_FT, home\_away, mom, match\_notes, report\_type, report\_type)

team (team\_id, team\_name, home\_kit\_colour, away\_kit\_colour)

referee (referee\_id, contact\_tel, email, forename, surname)

opposition (opposition\_id, opposition\_name, kit\_colour, pitch\_id)

away\_pitch (away\_pitch\_id, name, address, pitch\_description, notes, changing\_facilities, postcode)

facilities (facility\_id, facility\_title, description, postcode)

training\_plans (training\_plan\_id, area\_of\_focus, intensity, age\_range\_low, age\_range\_high, content, overview)

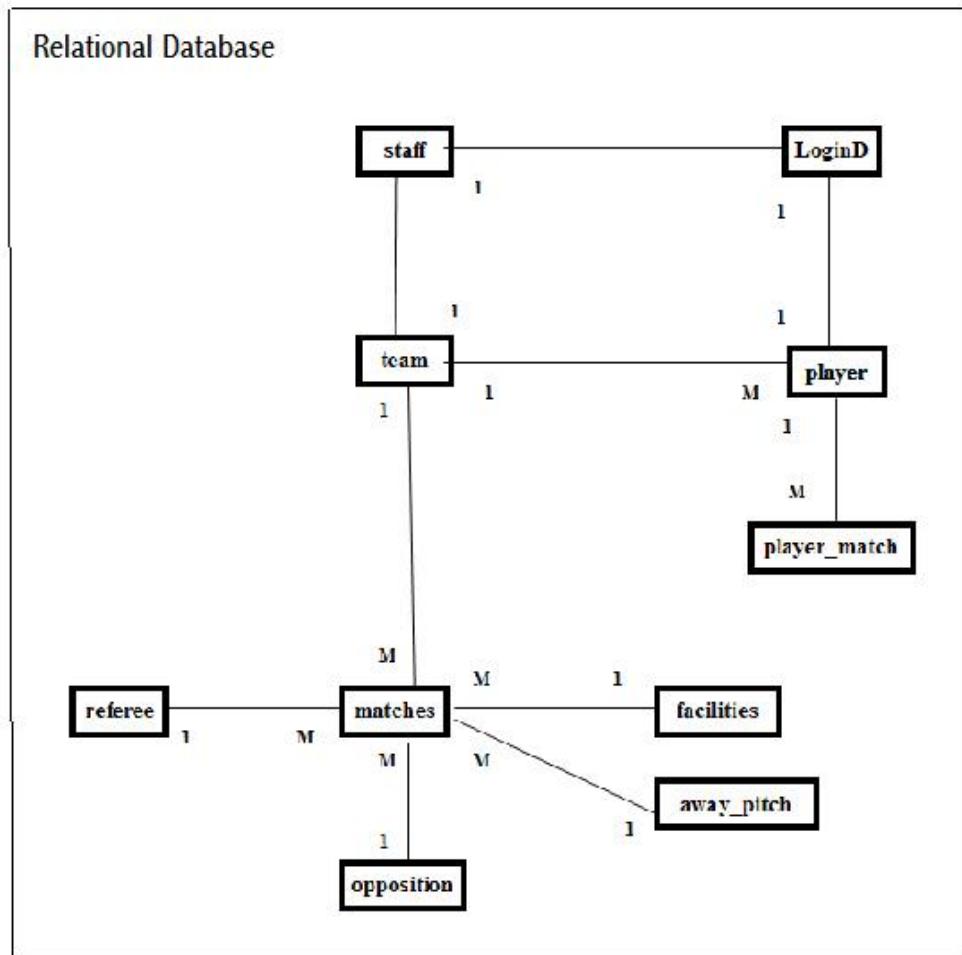
tactics (tactic\_id, area\_of\_focus, content, overview, summary)

injuries (injury\_id, name, body\_area, symptoms, treatments, advice, description, recovery\_time)

LoginD (PTFCusername, PTFCpassword, privileges, forename, surname, active, dob, email, home\_tel, mobile\_tel, address, postcode, next\_of\_kin\_name, next\_of\_kin\_tel)

Notices(notice\_id, title, content, date\_added, attention\_of, author)

## Class Diagram



## Additional Information/Knowledge Stores



## 9. Overview Of The ER Concept

### Overview Of The Entity Relationship Modelling Technique (UML Design-Level Class Diagrams)

This technique allows for a graphical visualisation of the data entities to be included along with the relationships between them. Elmasri and Navathe (2000)<sup>[1]</sup> provide a thorough overview of the technique: “the ER model describes data as entities, relationships and attributes”. An ‘entity’ is defined as “a thing in the real world with independent existence”. It may exist physically eg. a person or building, or a conceptually eg. a company or job. The properties that describe an entity are called ‘attributes’ eg. employee’s name, address, date of birth. Each attribute will have a value. ‘Primary Keys’ are attributes which can be used to uniquely identify an entity ie. “are distinct for each individual entity in a collection”. Sometimes several attributes together can be used to form a key. In this case the “combination of the attribute values must be distinct for each entity”

“Whenever an attribute of one entity type refers to another entity type, some relationship exists”. This defines the relationships between entities. Relationships in an ER diagram usually take one of the following forms:

- 1:1 (one-to-one) – an instance of entity a is related to a single instance of entity b; eg. one match has one opposition
- 1:N (one-to-many) – an instance of entity in a is (can be) related to many instances in entity b;  
eg. one team has many players (note one player cannot have many teams)
- M:N (many-to-many) – many instances of entity a are related to many instances of entity b;  
eg. many players play in many matches.

\*normalisation aims to remove all M:N relationships, replacing them with additional entities and 1:M relationships.

<sup>[1]</sup> Elmasri, R; Navathe, S (2000)

*Fundamentals Of Database Systems – (Third Edition) Addison-Wesley*

## 10. The Concept Of Normalisation –An Overview

### An Explanation Of The Normalisation Concept

Un-normalised tables have the potential to create data inconsistencies because individual records contain information relating to numerous things, rather than just attributes that are dependent upon each other directly eg. member\_id dictates member\_name, dob and team etc, but not team\_points or team\_manager, which depends upon team.

This approach therefore avoids problems such as:

- ‘insert anomalies’ (being unable to enter facts until another fact is available eg. not being able to create a player until the team’s manager has been decided)
- ‘delete anomalies’ (losing still required information when deleting a record eg. deleting the team manager’s details when the player is removed)
- ‘update anomalies’ (creating inconsistency within the system where different information is stored about the same thing in separate parts of the database eg. manager’s surname is different depending upon which team player is viewed)

...which can also lead to data duplication problems and performance degradation

The Normalisation process was conceived by Codd in 1972, and involves a top-down process of ensuring the database design meets the advised normalisation principles. Elmasri and Navathe (2000) [<sup>1]</sup>

[<sup>1]</sup> explain that initially 3 normal forms were proposed, but the model has since been expanded to contain 5 levels. In most instances however 3NF is considered sufficient:

1 NF – “all attributes must be unrepeatable, atomic values (contain single values that are simple and indivisible)”

2 NF – “all attributes in an entity must be dependent upon the primary key ie. the whole primary key and nothing but the primary key, must uniquely identify each attribute”

3NF – “there should be no transitive functional dependencies between attributes (should not be possible to determine a non-key attribute from another non-key attribute)”

---

<sup>[1]</sup> Elmasri, R; Navathe, S (2000)

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## 11. Evaluation Of Hosting Options

<b>Features</b>	<b>Host-it.co.uk</b>	<b>Firstserv.com</b>
<b>Cost</b>	<b>£16.90 monthly or £169 yearly</b>	<b>£45 quarterly £165 yearly</b>
<b>Disk Space</b>	100mb	50 mb
<b>Data Transfer (monthly)</b>	5gb	2gb
<b>FTP</b>	1 account	1 account
<b>Domains</b>	1	1
<b>Sub-Domains</b>	5	0
<b>Databases</b>		
<u>MS Access</u>	Yes £2.50	Yes
<u>MySQL</u>	Yes £13.95	Yes
<u>MS SQL Server</u>	Yes £4.50	yes
<b>Email details</b>		
<u>POP3 mail boxes</u>	10	10
<u>Email Aliases/Forwarding</u>	100	unlimited
<u>Webmail</u>	yes	yes
<u>Spam filtering</u>	yes	yes
<u>Virus scanning</u>	yes	no
<b>Other Features</b>	50% student discount, monthly contracts, account freezing available	1 free domain name

Sources:

[http://www.firstserv.com/hostingServices/sharedHosting/coldFusion/coldfusion\\_mx\\_hosting\\_details.cfm](http://www.firstserv.com/hostingServices/sharedHosting/coldFusion/coldfusion_mx_hosting_details.cfm)

-last accessed 15/04/06

[http://www.host-it.co.uk/hosting/panel\\_plans/plans/coldfusion\\_hosting.asp](http://www.host-it.co.uk/hosting/panel_plans/plans/coldfusion_hosting.asp)

-last accessed 15/04/06

## **12. Work Break-Down Structure**

1. Create site template (page layout)

a) create style sheet

2. Create Title Bar

3. Create navigation bar

Prototype 1

4. Create Homepage

5. Create 3 x static public pages

a) populate with test information

6 REVIEW (page layout and appearance)

Prototype 2

7. Create all public pages

8. add email forms

9. REVIEW

Prototype 3

10. Create Login Page, Member Home, forgotten password page & supporting databases

11. Secure Member Home page

12. REVIEW & TEST

Prototype 4

13. Create Isolated “single database” pages & supporting databases ie. tactics, injuries, notices

14. Integrate databases and access pages

15. REVIEW & TEST

Prototype 5

16. Create Relational Database & access pages –member details, matches, teams, oppositions etc

17. Integrate databases and access pages

18. REVIEW & TEST

Prototype 6

19. Secure all pages in members area and create supporting access roles

20. REVIEW & TEST

Phase 1 Release

21. MODULAR TESTING

22. END USER-TESTING

## **Appendix G –Phase 1 Implementation**

### **1. General Implementation Concepts**

**a) “Server-side includes”** were used to import sections of code into pages. This increased maintainability and performance. The navigation bars (defined in their own pages) are included on every page in the following way:

```
<cfoutput>
<!--if user is logged in -->
<cfif #GetAuthUser()# neq "">
<!--display member bar -->
<cfinclude template="memberbar.html">
<cfelse>
<!--otherwise display login button -->
<cfinclude template="login_navigationbar.html">
</cfif>
</cfoutput>
<!--display standard navigation bar (public site) -->
<cfinclude template="navbar.html"></td>
```

**b) The CSS style-sheet** is included in every page in the header to style the page:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">

<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Boulton Town FC - Home</title>
<!--include the site style sheet -->
<link href="site_style.css" rel="stylesheet" type="text/css" />
</head>

<body>
```

A section of the style-sheet:

---

```
/* Global Styles */

body {
    margin:10px;
}

p{
    padding: 10px 0px 0px 10px;
}

.attention a{
    color:#FF0000;
    padding: 10px 0px 0px 10px;
    font-weight: bold;
}

/* Title Bar */

#titleBar {
    font:12px arial;
    color: #99CCFF;
}

/* Navigation Bar */

#navigation a {
    font:10px arial;
    color: #0000FF;
    text-decoration: none;
    letter-spacing:0.1em;
    line-height:16px;
    display:block;
    padding:2px;
    border: 1px solid rgb(20,40,95);
    border-right-width: 2px;
    border-left-width: 2px;
}
```

---

**c) Data Validation and Verification** was implemented via both server and client side validation. Coldfusion provides rules which when a form is submitted, will perform checks on its contents. This can be used to check presence of data and range of values

```
<cfform action="tactic_update.cfm" method="post">

<!--server-side validation rules -->
<input type="hidden" name="overview_required" />
<input type="hidden" name="area_of_focus_required" />
<input type="hidden" name="summary_required" />
<input type="hidden" name="content_required" />
```

Additionally, client side validation was used on input fields to check the presence of required data. If a required field is not populated, the form is not submitted and an error message is displayed.

The screenshot shows a Coldfusion form titled "Soccer School - Tactics, Techniques & Skills - add/edit/delete". The form has several input fields: "Tip id:" (disabled), "Title" (empty), "Area Of Focus" (set to "defending"), "Summary" (containing "sweeper system"), and "Detail" (containing a paragraph about a sweeper system). At the bottom are "Save Changes" and "undo changes" buttons. A Microsoft Internet Explorer dialog box is overlaid on the "Summary" field, displaying the error message "Please provide a title".

A HTML conversion function was also used ( `HTMLEditFormat( data )` ) to ensure data transferred via forms is in a HTML friendly format and will therefore be stored in the database exactly how it was originally entered into the form. This involves ensuring special characters such as ‘spaces’ are encoded correctly.

```
<p>
  Summary:<br />
  <cfinput name="summary" type="text" value="#HTMLEditFormat(summary)#" size="100" required="yes" message="Please enter a summary to provide a general description">
</p>
```

### **c) Adding & Editing Data:**

Data is added into database tables using Coldfusion forms. These collect the required data using various methods including; drop-down menus, short text fields, long (scrollable) text fields, radio buttons and tick-boxes. The range was limited to these 5 so as to increase consistency. Underneath the form components, a submit button allows the data to be submitted for storage. Coldfusion then sends the contents of the form to a separate ‘processing page’ which accesses the database and stores the data. The code below shows how the processing page is defined and an example of a short text form component. The code also highlights some of the validation Coldfusion implements. If an ‘overview’ is not defined when the form is submitted, a pop-up error message is displayed. A second layer of

validation is implemented by the input tags. When the form is submitted, they check to ensure that the form components exist, with range checks on data also possible.

```
<cfform action="training_plan_update.cfm" method="post">

    <!--server-side validation rules -->
    <input type="hidden" name="overview_required" />
    <input type="hidden" name="area_of_focus_required" />
    <input type="hidden" name="intensity_required" />
    <input type="hidden" name="intensity_range" value="min=1, max=5" />
    <input type="hidden" name="age_range_low_required" />
    <input type="hidden" name="age_range_low_range" value="min=1, max=60" />
    <input type="hidden" name="age_range_high_required" />
    <input type="hidden" name="age_range_high_range" value="min=1, max=60" />
    <input type="hidden" name="content_required" />
    <input type="hidden" name="recovery_time_required" />

    <!-- provide training plan id to update page -->
    <cfif URL.training_plan_id neq >
        <input type="hidden" name="training_plan_id" value="#URL.training_plan_id#" />
    </cfif>

    Overview:<br />
    <cfinput name="overview" type="text" value="#HTMLEditFormat(overview)#" size="100" required="yes" message="Please enter an 'overview' provide a general description of the training plan">
```

The ‘processing page’ interprets the form components and inserts them into the appropriate database.

```
<cfif IsDefined("FORM.training_plan_id")>
<!--update tactics db-->
<cfupdate datasource="PTFC" tablename="training_plans">
<cfelse>
<!--insert a new record -->
<cfinsert datasource="PTFC" tablename="training_plans">

</cfif>
```

For efficiency, the same processing and data entry pages are used for both inserting new data and editing existing data. If a new record is being created then the data entry page is loaded without an id being passed. If data is being edited (an existing record has been searched for and the ‘edit’ link clicked) then the appropriate id is passed to the page, and the data is retrieved from the database and populated into the form components. When it receives the form, the processing page either creates a new record, or it retrieves the existing record (using the supplied id) and modifies the data. If all fields are being edited, the above code is used, however if specific fields need to be updated only, then this can be explicitly specified. This can be seen below in the systems administration update user details processing page. This code also highlights how the system checks to see if the new entered password is the same as the old one, rejecting the change if that is the case.

```
<!--check if new and old passwords same -->
<cfquery name="check_old" datasource="PTFC">
SELECT PTFCpassword
FROM LoginD
WHERE PTFCusername = '#FORM.PTFCusername#'
</cfquery>
<cfif check_old.RecordCount lt 1>

<!--insert a new record -->
<cfquery datasource="PTFC">
INSERT INTO LoginD(PTFCpassword, PTFCrole, PTFCusername, forename, surname, email, active)
VALUES ('#FORM.PTFCpassword#', '#FORM.PTFCrole#', '#FORM.PTFCusername#', '#FORM.forename#', '#FORM.surname#', '#FORM.email#',

<cfif IsDefined("FORM.active")> '#FORM.active#'
<cfelse> active = 'no'
</cfif>

</cfquery>
```

### **-dynamic drop down menus for editing/selecting**

Some drop-down menus in the system are populated by information stored in databases rather than static content. For example the options when selecting the ‘location’ for a fixture, will never change (home/away), and are therefore hard-coded:

```
<p>Location:<br />
<select name="home_away">
<option value=""></option>
<option value="Home" <cfif #HTMLEditFormat(match_detail.home_away) # eq "Home"> selected="selected" </cfif>>Home</option>
<option value="Away" <cfif #HTMLEditFormat(match_detail.home_away) # eq "Away"> selected="selected" </cfif>>Away</option>
</select>
```

However content such as ‘away ground’ needs to be dynamic, because as more locations are added, they need to be made available for selection in the list. Consequently, a query is used to retrieve the locations from the database table, and populate the list with the returned results. The list also enhances usability by displaying the location’s name to the user, but submitting it’s id as the value. This allows the system to accurately identify which location has been selected.

```
<!--away facilities-->
<cfquery name="away_facilities_detail" datasource="PTFC">
SELECT away_pitch_id, ground_name
FROM away_pitch
</cfquery>

Away Ground:<br />
<select name="pitch_id">
<!--blank option for default -->
<option value=""> </option>
<!--list of options populated by query -->
<cfoutput query="away_facilities_detail">
<option value="#away_facilities_detail.away_pitch_id#" >#away_facilities_detail.ground_name</option>
<cfif #HTMLEditFormat(match_detail.pitch_id)# eq "#away_facilities_detail.away_pitch_id#"> selected="selected" </cfif> >
</cfoutput>
</select>
```

#### **d) Deleting data:**

Records are deleted in a similar way to being edited. If the ‘delete’ link is selected, then the URL is passed to the delete confirm page. This page checks that the user has intended to delete the specified record. They have the option to proceed or cancel. If the proceed then the URL is passed to the processing page which retrieves the record from the database (the same way as when records are edited), as removes it. The user is then returned to the appropriate page automatically, (meaning processing pages are never ‘seen’ by users).

```
<!-- get record and delete it -->
<cfquery datasource="PTFC">
DELETE FROM facilitiesbooking
WHERE booking_id = #URL.booking_id#
</cfquery>

<!--link back -->
<cflocation url=
"facilities_booking.cfm?day=1&startmonth=#URL.startmonth#&startyear=#URL.startyear#&event_date=#URL.event_date#&store_date=#URL.store_date#">
```

#### **e) Viewing data:**

Search forms are used to construct queries to retrieve appropriate data to display in a results table.

The code below highlights how this is done on the tactics search page. The line “1=1” is necessary so as to ensure correctly constructed SQL in all queries. For example, if tactic\_id is not specified, then without 1=1, the ‘AND’ would cause an error. Although querying with no criteria would in fact therefore return all records, the message “please specify criteria” is displayed instead of the results table by another <cfif> function.

```
<!--query to get results of search from database-->
<cfquery datasource="PTFC" name="search_tactics">
SELECT TACTIC_ID, AREA_OF_FOCUS, OVERVIEW, CONTENT, SUMMARY
FROM tactics
WHERE
1=1
<cfif FORM.tactic_id neq ""> AND tactic_id = #FORM.tactic_id# </cfif>
<cfif FORM.keywords neq ""> AND (content LIKE '%#FORM.keywords#%' OR overview LIKE '%#FORM.keywords#%' OR summary LIKE '%#FORM.keywords#%') </cfif>
<cfif FORM.area_of_focus neq ""> AND area_of_focus LIKE '%#FORM.area_of_focus#%' </cfif>

ORDER BY #FORM.sort_by#
</cfquery>
```

In some other tables, more complex queries are necessary to retrieve data from multiple tables. For example in search members, because for integrity reasons, some data is contained in LoginD, while some is in players/staff. Additionally, data to be retrieved is different depending on the member type, meaning additional <cfif> statements are necessary to control the exact content of the query:

```
<!--if criteria entered do search -->
<cfif FORM.PTFCrole neq "">

<!--get member information -->
<cfquery name="member_detail" datasource="PTFC">
SELECT LoginD.PTFCusername, PTFCrole, forename, surname, active

<!-- if member is a staff/player, retrieve their team name -->
<cfif FORM.PTFCrole eq "player" OR FORM.PTFCrole eq "manager" OR FORM.PTFCrole eq "coach" OR FORM.PTFCrole eq "helper">
, team_name

<!--if FORM is a player, get their details -->
<cfif FORM.PTFCrole eq "player">
FROM (LoginD
INNER JOIN player ON player.PTFCusername = LoginD.PTFCusername)
INNER JOIN team ON player.team_id = team.team_id
WHERE player.current_player = 'Yes'
<cfif FORM.team_id neq "">
AND player.team_id = #FORM.team_id#
</cfif>
</cfif>

<!-- member is staff, get their staff information -->
<cfif FORM.PTFCrole eq "manager" OR FORM.PTFCrole eq "coach" OR FORM.PTFCrole eq "helper">
,primary_role,secondary_role,past_experience,qualifications
, FROM (LoginD
INNER JOIN staff ON staff.PTFCusername = LoginD.PTFCusername)
INNER JOIN team ON staff.team_id = team.team_id
WHERE staff.current_staff = 'Yes'
<!-- if a team is specified -->
<cfif FORM.team_id neq "">
AND staff.team_id = #FORM.team_id#
</cfif>
<!-- if a keywords are specified -->
<cfif FORM.keywords neq "">
AND staff.past_experience LIKE '#FORM.keywords%' OR staff.qualifications LIKE '#FORM.keywords%'
</cfif>
</cfif>
<cfelse>
FROM LoginD
WHERE PTFCrole = '#FORM.PTFCrole#'

</cfif>
ORDER BY forename, surname, PTFCrole
</cfquery>
```

The results table is then constructed in a similar way to a dynamic drop-down menu. The results of the query are used to populate the table with a new row being added for each record retrieved. On each row, where edit, more detail or delete options are provided, Coldfusion automatically adds the appropriate record id to the hyperlink.

```
<!--results -->
<cfoutput query="search_tactics">
<ttr>
<td> #tactic_id# </td>
<td> #overview# </td>
<td> #area_of_focus# </td>
<td> #summary# </td>
<td><a href="#tactic_detail.cfm?tactic_id=#tactic_id#" title="read the full profile of tactic #tactic_id#"><em> more detail </em></a></td>
<!--only make accessible to those with edit/delete privileges -->
<cfif IsUserInRole("tacticsEdit")>
<td><a href="#tactic_edit.cfm?tactic_id=#tactic_id#" title="edit tactic #tactic_id#'s details"><em> edit </em></a></td>
</cfif>
</ttr>
</cfoutput>
```

Clicking the more detail link loads a detail page which uses the id to retrieve all detail contained in the record and present it on the screen in a non-editable format ie. in plain text rather than form fields.

## f) Results Tables

Clicking the heading of a results table changes the ordering of the results by altering the 'sort by' value specified in the query. This information is supplied to the query via a hidden form field, so clicking the link changes the value without the user needing to specify it explicitly. The column which the results are currently sorted by is highlighted in bold, with the hyperlink removed.

Training Plan ID:	Overview:	Intensity	Area Of Focus	Min Age	Max Age	Content:	Modify:
18	defensive routines	2	attacking	9	14	<a href="#">more detail</a>	<a href="#">edit</a>
19	fitness work	2	attacking	9	17	<a href="#">more detail</a>	<a href="#">edit</a>
20	general workout	2	attacking	8	10	<a href="#">more detail</a>	<a href="#">edit</a>
21	fdsgs	2	defending	9	13	<a href="#">more detail</a>	<a href="#">edit</a>

Session variables are used to maintain a list of recent searches. The criteria entered are saved into cookies (session variables) and subsequently recent searches are displayed under the ‘search’ button. The recent searches are labelled by the keywords entered if have been used, otherwise the name ‘no keywords search’ is applied. Hovering over the search displays all the details as can be seen below. Clicking re-loads the search criteria and displays the results. A potential problem with using session variables for this purpose is that the recent searches are lost when the user logs out. This is criticised in evaluation.

Separate session variables are needed for each data field. They are first defined (if not already created), given a size (number of items of information they will hold), and then the `<cfset>` variable is used to store the data. When the recent searches link is clicked, the page is re-loaded with data in the URL. If this data is detected by coldfusion then the FORM field is populated with the session contents (loading the search data). LastSearchArray session variables are used in the system as an addition to the recent searches session variables. They maintain the contents of the user’s last search so that after updating/viewing data on different pages, the search criteria can be automatically re-loaded when returning to the search page again. This increases usability because the user is not required to re-search, they effectively are returned to the same page they left instead.

```

<cfform action="training_plan_search.cfm" method="POST">

<!--create defaults and arrays to hold form data and history -->

<!--training_plan_id -->
<cfparam name="FORM.training_plan_id" type="string" default="">
<!--create array -->
<cfif IsDefined("SESSION.PriorSearchesArray_trainingplans_training_plan_id") eq FALSE>
  <cfset SESSION.PriorSearchesArray_trainingplans_training_plan_id=ArrayNew(1)>
</cfif>

<!--loads search history when clicked - info provided in URL -->
<cfif IsDefined("URL.training_plan_id")>
  <cfset FORM.training_plan_id = URL.training_plan_id>
</cfif>

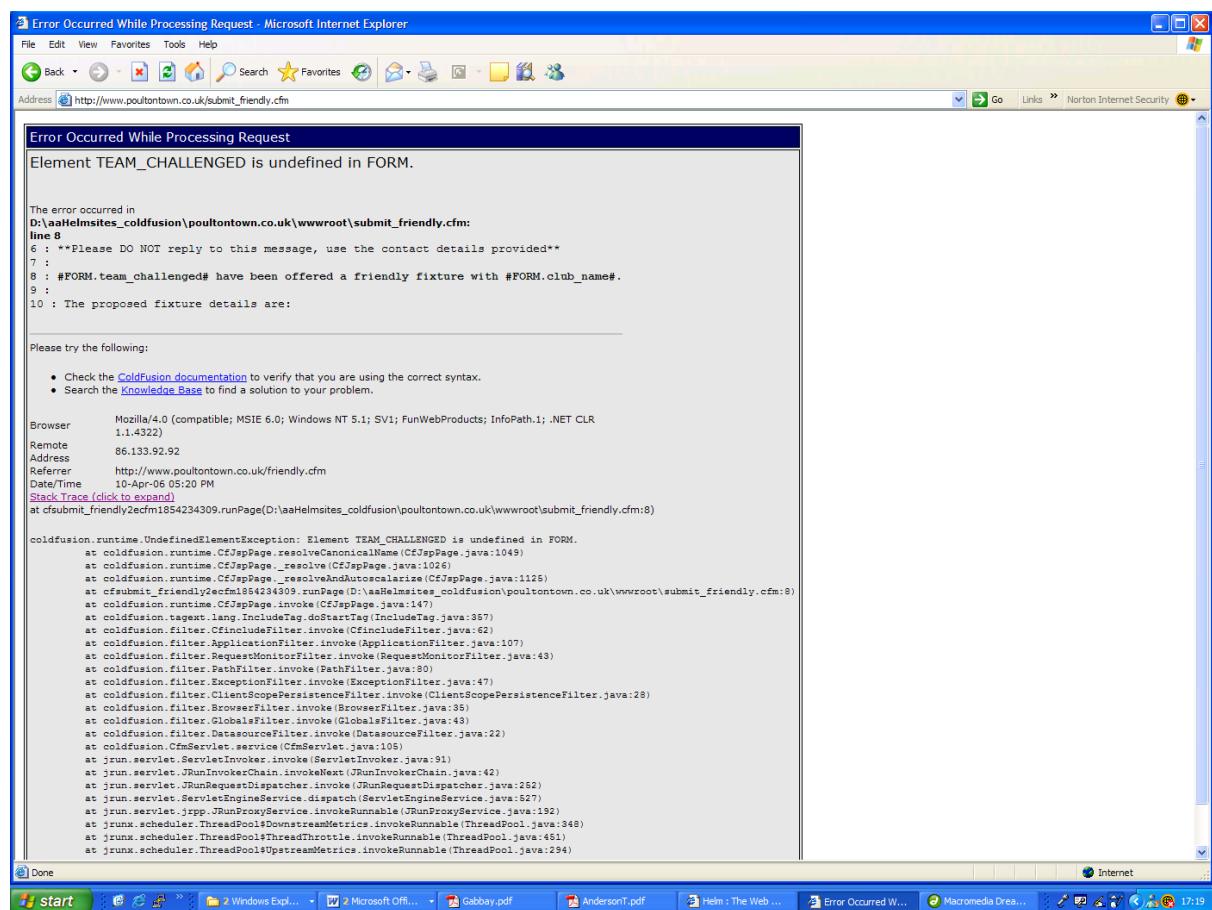
<!-- Last Search -->
<cfif IsDefined("SESSION.LastSearchArray_trainingplans_training_plan_id") eq FALSE>
  <cfset SESSION.LastSearchArray_trainingplans_training_plan_id=ArrayNew(1)>
</cfif>

```

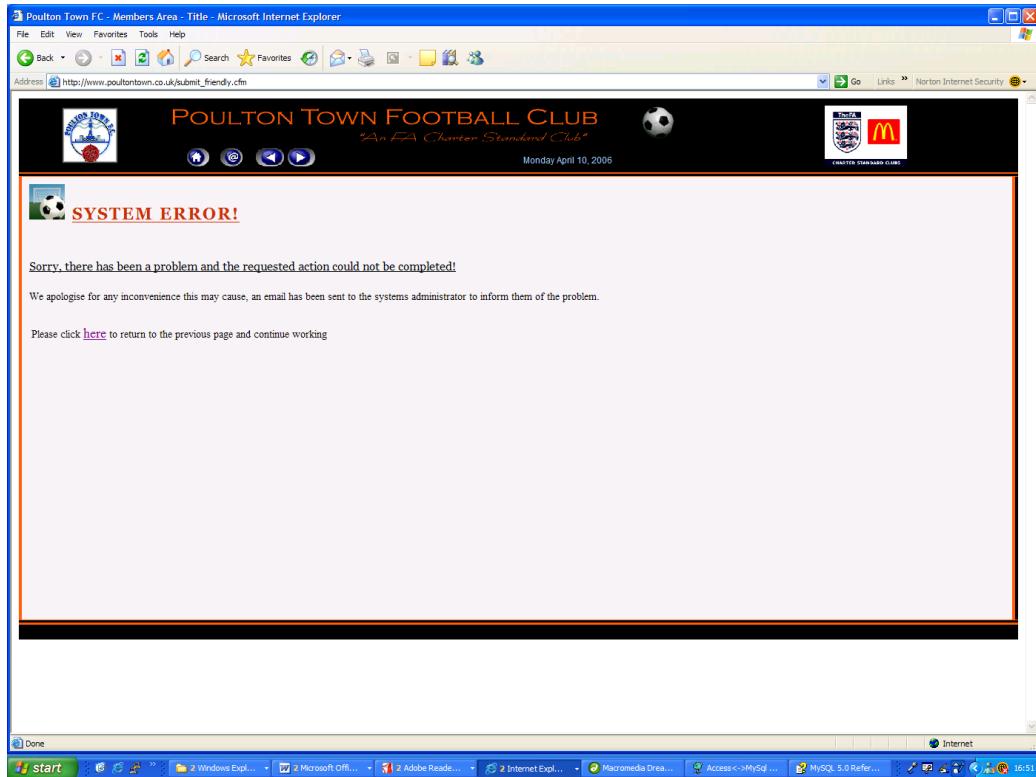
## **g) Error Messages**

ColdFusion provides the facility to create a standard system error message, which is displayed to the user instead of the usual complex Coldfusion diagnostic.

Standard Error Message:



## New User-Friendly Error Message:



This was achieved by adding the following code into Application.cfm (a standard Coldfusion file which is referenced when loading every page).

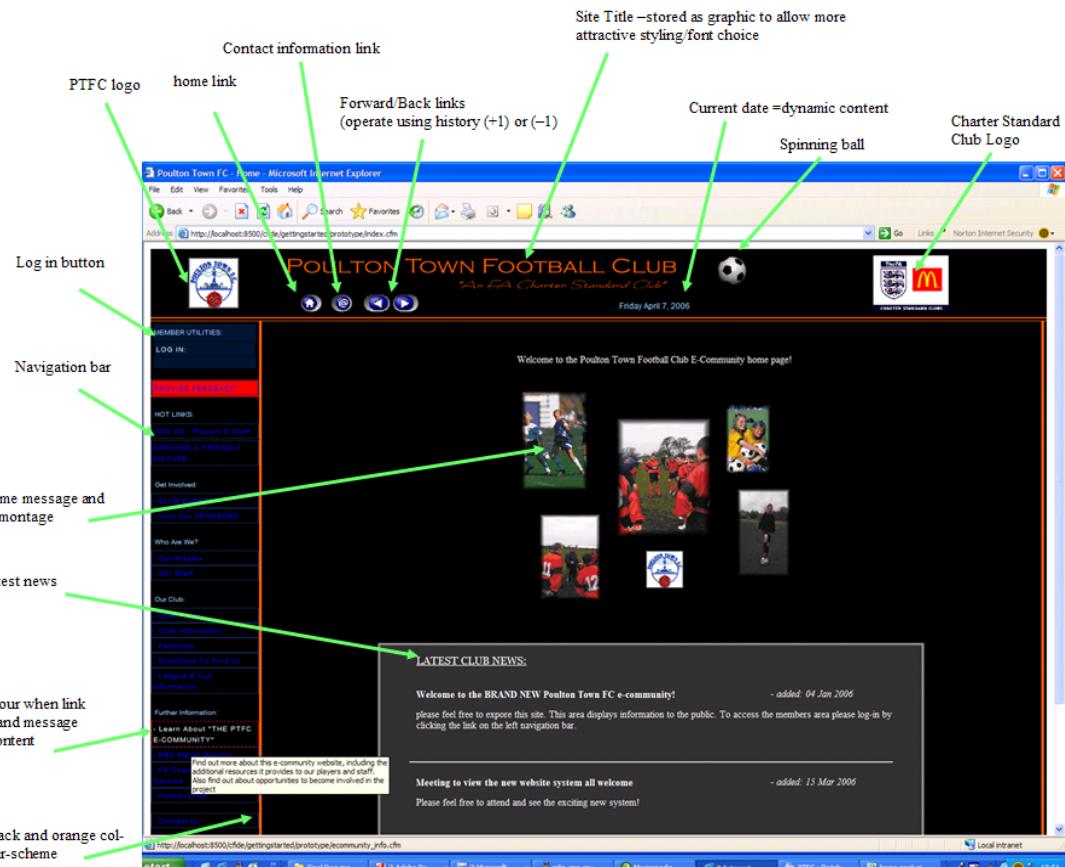
```
<!--catch all errors -->
<cferror type="exception" exception="any" template="error.cfm" mailto="admin@poulton.co.uk">
```

Code inserted into the top of the error.cfm message page, also sends an error report to the systems administrator automatically. This will allow them to identify and fix any problems:

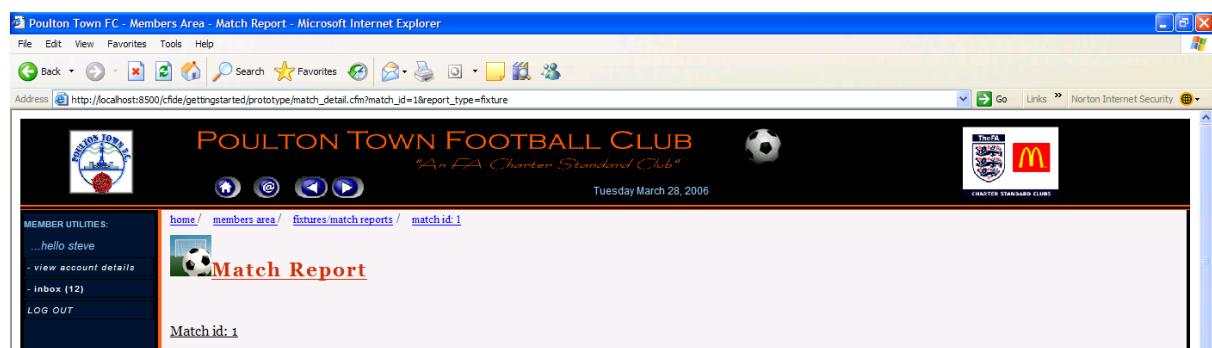
```
<cfmail from= "System Error" to="#ERROR.MailTo#" subject="Error found on page: #ERROR.Template#" server="194.150.252.51">
<p>
A user has encountered a problem on the system:<br />
<strong>Details:</strong><br />
Time: #Error.DateTime#<br />
Browser: #Error.Browser#<br />
User's IP address: #Error.RemoteAddress#<br />
<br />
Previous Page: #Error.HTTPReferer#<br />
Error Page: #Error.Template# (accessed via: #Error.QueryString#)
</p>
<p>
Content Displayed To The User:<br /> #Error.GeneratedContent#
</p>
<p>
Coldfusion Error Diagnostics:<br />
#Error.Diagnostics#
</p>
</cfmail>
```

## 2. Public Website

Features of the home page, title bar and navigation bar are highlighted



Breadcrumbs appear on every page on the system so as to indicate the location of the current page within the structure. Clicking on a breadcrumb provides a hyperlink to the appropriate page.



Public pages display information about the club via static content. A variety of these pages exist and are linked to via the standard navigation bar on the left. An example below is the club history page.

For the 'arrange friendly fixture' page, a form ensures all the required information is collected and routes it via an email to the appropriate manager (depending on which teams have been challenged).

The member's home page welcomes the member after they have logged on. It displays latest news and indicates if any messages have been received (quick messages –see phase 3)

Team home pages automatically display notices relevant to the individual team and will provide a location for team specific content to be added if required

### 3. Feedback Facility

To assist with evaluation, feedback on the site was collected using a form. This stored information in the database. Later as part of phase 4 it is retained for permanent use the system's built-in feedback facility. During development the link was flagged in red to draw attention to it and encourage use.

Poulton Town FC - Members Area - Tactics Resource - edit - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://localhost:8500/cfide/gettingstartedprototype/feedback.cfm

LOG IN:

Provide FEEDBACK!

HOT LINKS:

- JOIN US Players & Staff
- ARRANGE A FRIENDLY FIXTURE

Get Involved:

- CLUB EVENTS
- Visit Our SPONSORS

Who Are We?

- Our Players
- Our Staff

Our Club:

- Club History
- Club Information
- Facilities
- Directions To Find Us
- League & Cup Information

Further Information:

- Learn About "THE PTFC E-COMMUNITY"
- BBC Match Reports
- F.A Charter Standard Scheme
- Further Links
- Contact Us

**Provide Feedback About The Site**

We would greatly appreciate your comments and opinions about this site.

It is being created as part of University Final Year project at Leeds University by Stephen Brown. Providing feedback will not only assist with this project, but will also help improve the quality of the site when it is released for the 2006/07 season. Thankyou in advance!

all comments are anonymous and are used purely for evaluating the website

General Site Usability:

Site Appearance/Visual Appeal:

Public Website Rating:

Members Area Rating:

Chat Forum Rating:

Overall Rating Of Functionality Offered:

Do you think you would use the system:

When would you be most likely to use the system:

- 
- 

Which features/functionality would you use most:

- 
- 
- 

What extra features would you like to see:

Done

Local intranet

start Final Documentation 8. Phase 4.doc - Micro... Summary of work-ass... 5 (p). Phase 1 - Imple... Macromedia Dreamwe... Poulton Town FC - M... 21:59

## 4. The Roll Based Security Model

Each user is defined a role. This field replaced the ‘privileges’ field intended to contain all functionality access rights, which has been moved into a new ‘roles’ table, using PTFCrole as a primary key to link the two:

Login : Table							
	PTFCusername	PTFCpassword	PTFCrole	forename	surname	active	security_questions
+ chris	ptfc	poultontown	system administrator	chris	davies	no	what is your mother's maiden name
+ chris_d			system administrator	Chris	Davis	yes	what is your mother's maiden name
+ coach	a		coach	dave	spencer	yes	what is your mother's maiden name
+ committee	a		committee	money	man	yes	what is your mother's maiden name
+ helper	a		helper	oerkeen	dad	yes	what is your mother's maiden name
+ jb	a		system administrator	n	d	yes	what is your mother's maiden name
+ jhs2sab	a		system administrator	steve	brown	yes	what is your mother's maiden name
+ manager	a		manager	alex	ferguson	yes	what is your mother's maiden name
+ o	a		parent	ever	keen	no	what is your mother's maiden name
+ parent	a		parent	john	smith	yes	what is your mother's maiden name
+ player	a		player	ryan	giggs	yes	what is your mother's maiden name
+ ryan_giggs	a		system administrator	ryan	giggs	yes	what is your mother's maiden name
*							

Functionality privileges are defined for each role. This allows flexibility regarding access rights to be maintained easily and centrally. ‘Privileges’ is not an atomic field because this is the format Coldfusion requires the data to be stored to it can store the string in a cookie.

PTFCrole	privileges
coach	tacticsView,tacticsEdit,trainingView,trainingEdit,injuryView,injuryEdit,noticeEdit,facilitiesBook,forumView,memberDetail,matchReportNotes,matchesEdit,matchesView
committee	tacticsView,tacticsEdit,trainingView,trainingEdit,injuryView,injuryEdit,noticeEdit,facilitiesBook,forumView,memberDetail,matchReportNotes,matchesEdit,matchesView
helper	tacticsView,trainingView,injuryView,forumView,matchesView
manager	tacticsView,tacticsEdit,trainingView,trainingEdit,injuryView,injuryEdit,noticeEdit,facilitiesBook,forumView,memberDetail,matchReportNotes,matchesEdit,matchesView
parent	matchesView,visitorForumView
player	tacticsView,trainingView,injuryView,forumView,matchesView
system adminis	tacticsView,tacticsEdit,trainingView,trainingEdit,accountsAdmin,injuryView,injuryEdit,noticeEdit,facilitiesBook,forumView,forumModerate,noticeAdmin,bookingsAdmin,memberDetail,r

Logging In – when a user attempts to access a page they are forced to log-in if they haven’t already done so

```
<!-- only authorised users can view this page -->
<cfinclude template="ForceUserLogin.cfm">

    <!-- checks privileges -->
    <cfif IsUserInRole("AccountsAdmin")>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">

<head>
<meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1" />
<title>Poulton Town FC - Members Area - Member Personal Details</title>
<link href="site_style.css" rel="stylesheet" type="text/css" />
</head>

<body>

    <!-- Title Bar -->
    <div id="titlebar">
        <table border="0" cellpadding="0" cellspacing="0" width="100%" height="100%">
            <tr>
```

ForceUserLogin.cfm takes the inputted username/password and checks them against stored details. If they are valid, the user's role is retrieved and used to reference the corresponding record in the 'roles' table. Username, password and the list of functionality access rights are then loaded into a cookie (session variable) and stored for the duration of the session.

```
<!-- make the user log in -->
<cfset error="">
<!-- if the user has not logged in -->
<cfllogin>
<cfif IsDefined("FORM.username") is False
or IsDefined("FORM.password") is False>
<cfinclude template="log_in_page.cfm">
<cfabort>
</cfif>

<!-- ensure username and password provided -->
<cfif FORM.username IS "" OR FORM.password IS "">
<cfset error="username or password required">
<cfinclude template="log_in_page.cfm">
<cfabort>
</cfif>

<!-- Lock up username and password in database -->
<cfquery name="loginqury" datasource="PTFC">
SELECT *
FROM LoginD_roles
WHERE Roles.PTFCrole=LoginD_PTFCrole
AND PTFCusername = "#FORM.username"
AND PTFCpassword = "#FORM.password"
</cfquery>

<!-- if details found in database -->
<cfif loginqury.RecordCount is 1 AND loginqury.active eq "yes">
<!-- store user details -->
<cflogin user name="#FORM.username#" password="#FORM.password#" roles="#loginqury.privileges#">

<!-- details incorrect or not found -->
<cfelse>

<!-- if users account is set to inactive -->
<cfif loginqury.active eq "no">
<cfset error="Sorry, your account is not currently active -please contact the systems administrator if you are unsure why">
<cfelse>

<!-- if account details are incorrect -->
<cfset error="invalid username or password">
</cfif>

<!-- show login form again -->
<cfinclude template="log_in_page.cfm">
<cfabort>
</cfif>
</cfllogin>
```

If login fails then an appropriate error message is displayed.

The screenshot shows a Microsoft Internet Explorer window with the following details:

- Title Bar:** Poulton Town FC Log In - Microsoft Internet Explorer
- Address Bar:** http://localhost:8500/cfde/gettingstarted/prototype/member\_details.edit.cfm
- Header:** Poulton Town Football Club, An FA Charter Standard Club, Tuesday March 28, 2006
- Left Sidebar (Member Utilities):**
  - LOG IN: (highlighted)
  - PROVIDE FEEDBACK
  - HOT LINKS: JOIN US - Players & Staff, ARRANGE A FRIENDLY FIXTURE
  - Get Involved: CLUB EVENTS, VISIT Our SPONSORS
  - Who Are We?: Our Players, Our Staff
  - Our Club: Club History, Club Information, Facilities, Directions To Find Us, League & Cup Information
  - Further Information: Learn About THE PTFC E-COMMUNITY, BBC Match Reports, FA Charter Standard Scheme, Further Links, Contact Us
- Main Content Area:**

Poulton Town E-Community - Member Log-In Page

Note - this area is for club members only. Hacking is a crime and Poulton Town FC takes this offence extremely seriously.

If you have come to this page by mistake, please [click here](#) to return to the public home page, or use the navigation links on the left of the screen to continue browsing.

To access member services please enter your username & password below:

Username:  (empty)

Password:  (empty) *invalid username or password*

[Log In](#) [Clear](#)

*Forgotten your username or password?*

If you have come to this page by mistake, please [click here](#) to return to the public home page, or use the navigation links on the left of the screen to continue browsing.

To access member services please enter your username & password below:

Username:

Password:

*Sorry, your account is not currently active -please contact the systems administrator if you are unsure why*

[Log In](#) [Clear](#)

Clicking the logout button displayed on the menu deletes the cookie (this also happens automatically when the browser window is closed). The logout page is displayed:

Poulton Town FC - Logged out - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Go Links Norton Internet Security

Address: http://localhost:8500/cfide/gettingstarted/prototype/logged\_out.cfm

Tuesday March 29, 2006

**Poulton Town Football Club** SAN FA Charter Standard Club

MEMBER UTILITIES: home / logged out

LOG IN

ARRANGE A FRIENDLY FIXTURE

Get Involved

CLUB EVENTS

VISIT OUR SPONSORS

Who Are We?

Our Players

Our Staff

Our Club

Club History

Club Information

Facilities

Directions To Find Us

League & Cup Information

Further Information:

Learn About THE PTFC

Accommodation

Match Reports

FA Charter Standard Scheme

Further Links

Contact Us

Thankyou, you have been successfully logged out!

Where would you like to go now?

- > The Poulton Town FC Home Page
- > BDC Match Reports
- > Sky Sports Football
- > Further Links

... or if you would like to return to the login page, [click here](#)

Content of Coldfusion pages can be varied depending on access rights. The members bar varies depending on the role of the user so only functionality they can access is displayed:

*Systems administrator: Player:*

Poulton Town FC - Members Area - Tactics Resource

File Edit View Favorites Tools Help

Back Search Favorites Go Links

Address: http://localhost:8500/cfide/gettingstarted/prototype/members\_area.cfm

POULTON TOWN FOOTBALL CLUB

MEMBER UTILITIES: home / members area

LOG OUT

TEAM PAGES: Member Home Page Team Home Pages: 1st Team 90

COMMUNICATION: Full Member Directory Quick Message Inbox Club Chat Forum Post A Notice / Event

FOOTBALL RESOURCES: Matches/Fixtures Search Soccer School- Skills, Tactics & Techniques Training Resources Warmup Info & Injury Diagnosis

TOOLS: Book Facilities Directions To Away Games

SYSTEMS ADMINISTRATION: Manage User Accounts

home / members area

Hello steve (h2sab)

Welcome To The Member Area

You have 12 new messages

*Parent:*

Poulton Town FC - Members Area - Tactics Resource

File Edit View Favorites Tools Help

Back Search Favorites Go Links

Address: http://localhost:8500/cfide/gettingstarted/prototype/members\_area.cfm

POULTON TOWN FOOTBALL CLUB

MEMBER UTILITIES: home / members area

LOG OUT

TEAM PAGES: Member Home Page Team Home Pages: 1st Team 90

COMMUNICATION: Full Member Directory Quick Message Inbox Club Chat Forum

FOOTBALL RESOURCES: Matches/Fixtures Search Soccer School- Skills, Tactics & Techniques Training Resources Warmup Info & Injury Diagnosis

TOOLS: Directions To Away Games

PROVIDE FEEDBACK

HOT LINKS: JOIN US - Players & Staff ARRANGE A FRIENDLY FIXTURE Get Involved CLUB EVENTS Visit Our SPONSORS

home / members area

Hello john (parent)

Welcome To The Member Area

You have 0 new messages

## **Displaying User Details On The Members bar**

The member's navigation bar has been customised to display the user's name at all times, so as to increase the apparent complexity of the system and provide a more personalised user interface.

```
<cfset u="#GetAuthUser()#>
<cfquery name="getname" datasource="PTFC">
SELECT forename, PTFCusername, surname
FROM LoginD
WHERE PTFCusername = '#u#'
</cfquery>

<tr><td height="25">
<cfoutput query="getname"><cfif #GetAuthUser()# neq ""><em> <big>
<hello> &nbsp;...hello #forename#</hello></big></em>
</cfif></cfoutput>
</td>
</tr>
```

The number of messages in the user's inbox is displayed at all times on the member bar. The code below shows how each time the navigation bar is loaded, the number of unread messages is checked and displayed.

```
<cfquery name="checkmessages" datasource="PTFC">
SELECT to_id,old
FROM member_messages
WHERE to_id = "#GetAuthUser()#"
AND old=0
</cfquery>

<tr> <td height="25">
<a href="member_messages_inbox.cfm?error=" title="quick messages inbox"> <strong>- inbox
<cfif checkmessages.RecordCount neq 0>
<cfoutput> (#checkmessages.RecordCount#) </cfoutput>
</cfif>
</strong></a></td></tr>
```

## 5. Systems Administration

Users now have the ability to change their own details:

The screenshot shows a Microsoft Internet Explorer window with the title "Poulton Town FC - Members Area - Member Personal Details - Microsoft Internet Explorer". The address bar shows the URL [http://localhost:8500/cfide/gettingstartedprototype/member\\_details\\_edit.cfm?changes=yes&CFID=604&CFTOKEN=45629044](http://localhost:8500/cfide/gettingstartedprototype/member_details_edit.cfm?changes=yes&CFID=604&CFTOKEN=45629044). The page contains a sidebar with links for Morball Resources, Tools, Systems Administration, and a Feedback link. The main form has fields for Home Telephone Number (01253891361), Mobile Telephone Number (07732293995), Address (29 Deepdale avenue, carleton), Postcode (FY67NS), Next Of Kin Name (Christine Brown), and Next Of Kin Phone Number (01253891361). Below these are sections for Change Password (Old Password, New Password, Re-enter New Password) and Security Question (Question dropdown set to "What is your mother's maiden name?", Answer: stott). A "Save Changes" button is present, with a note: "\*for security reasons you must change your password when updating any details". A "Cancel" button is also available.

For security reasons, in order to change details the user is required to enter their new and old password. Appropriate status messages are provided to indicate whether changes are successful, in line with Nielsen's recommendations for web usability

The screenshot shows three browser windows side-by-side. All three windows have the same header: "POULTON TOWN FOOTBALL CLUB" and "An FA Charter Standard Club". The date "Tuesday March 28, 2006" is visible in the top right of the central window. The left window shows a "SUCCESS: changes saved!" message. The middle window shows a "FAILED: old password not correct!" message. The right window shows a "FAILED: new password identical to old password, please choose something different!" message. Each window displays a "jhs2sab 's Personal Details" page with fields for Forename (steve), Surname (brown), and Date Of Birth (18/03/1984). The sidebar on the left of each window includes links for Member Utilities (hello steve, view account details, inbox (12), LOG OUT), Team Pages (Member Home Page, Team Home Pages: 1st Team, go), and Communication (Full Member Directory, Quick Message Inbox, Club Chat Forum).

It is possible to request a new password via the login page if details have been forgotten

Poulton Town FC - Log In - Microsoft Internet Explorer  
File Edit View Favorites Tools Help  
Back Forward Stop Refresh Favorites Links Norton Internet Security  
Address http://localhost:8500/cfide/gettingstarted/prototype/member\_home.cfm  
POULTON TOWN FOOTBALL CLUB "An FA Charter Standard Club"  
Tuesday March 28, 2006  
Member Utilities: home / login  
LOG IN:  
PROVIDE FEEDBACK!  
HOT LINKS:  
JOIN US - Players & Staff  
ARRANGE A FRIENDLY FIXTURE  
Get involved:  
CLUB EVENTS  
Visit Our SPONSORS  
Who Are We?  
Our Players  
Our Staff  
Our Club:  
Club History  
Club Information  
Facilities  
Directions To Find Us  
League & Cup Information  
Further Information:  
Learn About "THE PTFC E-COMMUNITY!"  
BBC Match Reports  
FA Charter Standard Scheme  
Further Links  
Contact Us  
Forgotten your username or password?

The user is directed to a form which enables them to request a new username/password only if they can enter their details correctly (matching the details stored in their account details on the system)

Poulton Town FC - Forgotten Username Or Password - Microsoft Internet Explorer  
File Edit View Favorites Tools Help  
Back Forward Stop Refresh Favorites Links Norton Internet Security  
Address http://localhost:8500/cfide/gettingstarted/prototype/forgotten.cfm  
POULTON TOWN FOOTBALL CLUB "An FA Charter Standard Club"  
Tuesday March 28, 2006  
Member Utilities: home / login reset password  
Forgotten Your Username?  
For security reasons there is no automated facility to retrieving your username. You can however request a reminder from the webmaster by submitting the following form:  
Forename: \_\_\_\_\_  
Surname: \_\_\_\_\_  
Date Of Birth (dd / mm / yyyy): \_\_\_\_\_  
Password (if known): \_\_\_\_\_  
Request Username Clear  
Forgotten Your Password?  
In order to request a new password please submit the following web-form. An email containing new login information will then be sent to your designated club e-mail address. If you do not have access to this account then you will need to contact the e-community webmaster directly (details are provided at bottom of this page).  
Forename: \_\_\_\_\_  
Surname: \_\_\_\_\_  
Date Of Birth (dd / mm / yyyy): \_\_\_\_\_  
E-mail Address (as held on club records): \_\_\_\_\_  
Reset Password Clear  
\* Please note that all the above details must be entered correctly and match the records held for your account. The club cannot accept any responsibility for incorrect details held on the system meaning your request is unsuccessful. If you have problems resetting your account, or are not able to use the automated reset system for some reason, please contact the e-community webmaster directly using the details provided below. The webmaster is however a voluntary position, therefore no guarantees can be made regarding the time taken to process your request. We apologise for any inconvenience this may cause.  
Webmaster: Chris Davies  
Phone - 02323 4342432  
Email - sabro1000@yahoo.com  
Done  
Start Final Documents... Microsoft Off... Adobe Reader Macromedia Dre... Poulton Town FC... Local intranet

If details are entered incorrectly then an error message is displayed

Poulton Town FC - Reset Password - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Favorites Home

Address http://localhost:8500/cfde/gettingstarted/prototype/heipassword.cfm

Tuesday March 28, 2006

POULTON TOWN FOOTBALL CLUB "An FA Charter Standard Club"

MEMBER UTILITIES LOG IN PROVIDE FEEDBACK HOT LINKS CLUB EVENTS Visit Our SPONSORS Who Are We? Our Players Our Staff Our Club Club History Club Information Facilities Directions To Find Us League & Cup Information Further Information Learn About "THE PTFC E-COMMUNITY" BBC Match Reports FA Charter Standard Scheme Further Links Contact Us

Thankyou!

Sorry the system was unable to locate your account, please check the details you entered and retry

Try Again

Done Local intranet

start Final Document... Microsoft Off... Adobe Reader Macromedia Dre... Poulton Town FC... Norton Internet Security

If details are entered correctly then the user is asked to confirm the correct account has been identified. The security question can then be answered.

Poulton Town FC - Reset Password - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Favorites Home

Address http://localhost:8500/cfde/gettingstarted/prototype/heipassword.cfm

Tuesday March 28, 2006

POULTON TOWN FOOTBALL CLUB "An FA Charter Standard Club"

MEMBER UTILITIES LOG IN PROVIDE FEEDBACK HOT LINKS CLUB EVENTS Visit Our SPONSORS Who Are We? Our Players Our Staff Our Club Club History Club Information Facilities Directions To Find Us League & Cup Information Further Information Learn About "THE PTFC E-COMMUNITY" BBC Match Reports FA Charter Standard Scheme Further Links Contact Us

Thankyou!

is this your account...

Username: jhs2sab  
Forename: steve  
Surname: brown  
Date Of Birth: 18/03/1984  
Email Address: sabro1000@yahoo.com

NO re-enter details

Please now answer the security question below and an email containing new login information will then be sent to your designated club e-mail address.

If you do not have access to the email account detailed above then you will need to contact the e-community webmaster directly via one of the following methods:

Phone - 02323 4342432  
Email - sabro1000@yahoo.com

what is your mother's maiden name?

Answer:

Request Clear

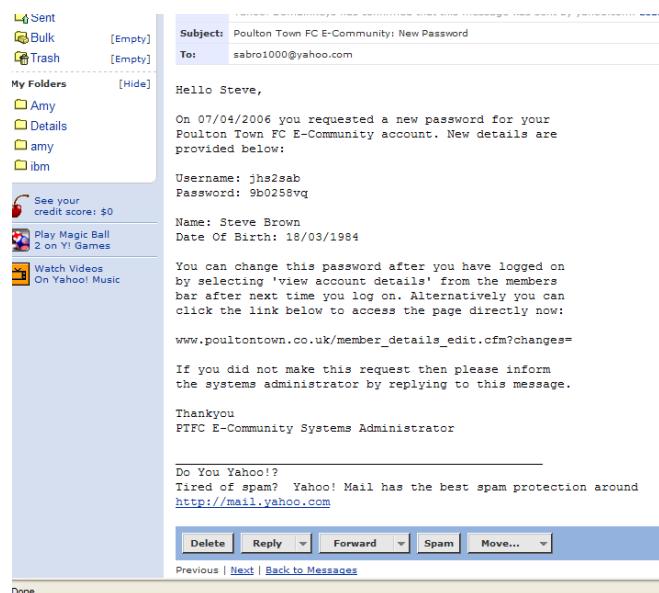
Done Local intranet

start Final Document... Microsoft Off... Adobe Reader Macromedia Dre... Poulton Town FC... Norton Internet Security

If the security question is answered correctly then code generates a random password...

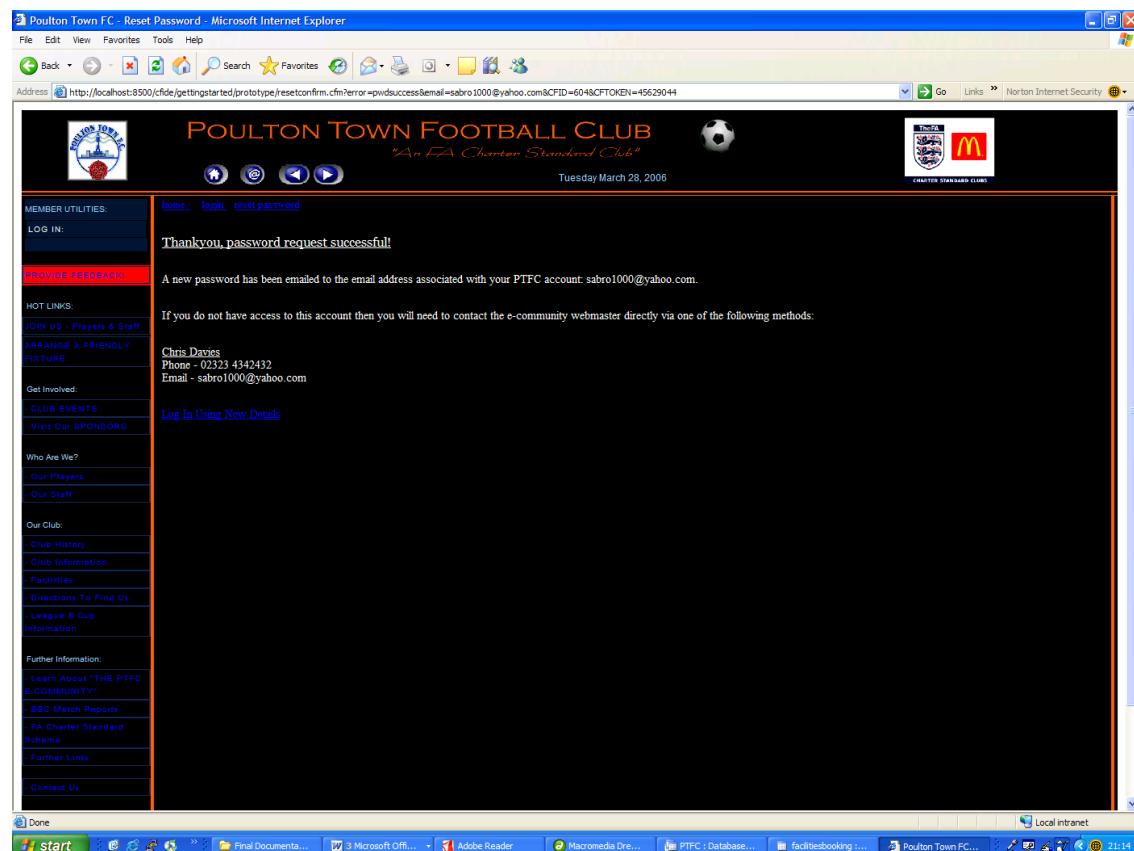
jhs2sab | pass1word -> jhs2sab | 9b0258vq

....which is emailed to the user's account (rather than displaying it, for security reasons)...



Done

...and a status message is displayed....



## Original Existing Functionality For Systems Administration - control of member accounts

New users can be added or existing users searched for, with a link to edit their details.

The screenshot shows a Microsoft Internet Explorer window with the title "Poulton Town FC - Members Area - Member Personal Details - Microsoft Internet Explorer". The address bar shows the URL [http://localhost:8500/cfde/gettingstartedprototype/admin\\_reset\\_passwords\\_search.cfm](http://localhost:8500/cfde/gettingstartedprototype/admin_reset_passwords_search.cfm). The page header includes the club's logo, name, and a "Charter Standard Club" badge. The main content area is titled "Systems Administration - User Account Search". It features a search form with fields for Username, Forename, Surname, and User Type (set to "admin"). There is also a checkbox for "Active Users Only". A "Search" button is present. Below the form, a message states "Your search returned 5 results:" followed by a table with the following data:

Username	Forename	Surname	Role	Active	Action
jhs2sab	steve	brown	system administrator	yes	<a href="#">change account details</a>
chris	chris	davies	system administrator	no	<a href="#">change account details</a>
ryan_giggs	ryan	giggs	system administrator	yes	<a href="#">change account details</a>
jb	n	d	system administrator	yes	<a href="#">change account details</a>
chris_d	Chris	Davis	system administrator	yes	<a href="#">change account details</a>

A member's details can be changed. Note it is possible to ban a user from either the forum or the entire system

The screenshot shows a Microsoft Internet Explorer window with the title "Poulton Town FC - Members Area - Member Personal Details - Microsoft Internet Explorer". The address bar shows the URL [http://localhost:8500/cfde/gettingstartedprototype/admin\\_reset\\_passwords.cfm?PTFCUserid=0&changes=1](http://localhost:8500/cfde/gettingstartedprototype/admin_reset_passwords.cfm?PTFCUserid=0&changes=1). The page header includes the club's logo, name, and a "Charter Standard Club" badge. The main content area is titled "Systems Administration - Reset Account Details". It features a form with fields for Username (set to "chris"), Forename (set to "chris"), Surname (set to "davies"), New Password, Re-enter New Password, Email Address, and User Type (set to "system administrator"). There are checkboxes for "Active System User" and "Active Forum User". At the bottom are "Save Changes" and "Cancel" buttons.

## 6. Fixtures/Match Reports

Selecting to view match reports/fixtures displays a menu page. This allows the choice of either previews or match reports (to aid quicker location of required information) for viewing.

If the user has the correct privileges a new preview/report can be created. The location and team need to be provided at this stage so as to allow retrieval of the appropriate oppositions and facilities (home/away) for the following form.

The screenshot shows a Microsoft Internet Explorer window with the title bar "Poulton Town FC - Members Area - Match Search - Microsoft Internet Explorer". The address bar shows the URL "http://localhost:8500/cfide/gettingstarted/prototype/match\_search.cfm?report\_type=". The page header includes the club logo, name "POULTON TOWN FOOTBALL CLUB An FA Charter Standard Club", the date "Tuesday March 28, 2006", and the McDonald's logo. On the left is a sidebar with navigation links for MEMBER UTILITIES, TEAM PAGES, COMMUNICATION, FOOTBALL RESOURCES, TOOLS, and SYSTEMS ADMINISTRATION. The main content area is titled "Fixture/Match Report Search" and contains a sub-header "Which type of reports would you like to view:". It lists options: "match previews/fixtures" (selected), "match reports", and "Create New Fixture Report". Below this is a dropdown menu set to "1st Team" and buttons for "home" and "create". A text input field "Please Enter Search Criteria!" is present. The status bar at the bottom shows various open tabs and the date "21/05".

Selecting to view a preview or report displays a search form. Entering criteria allows results to be displayed, with a clickable link which provides access to the full report/preview. Depending on access privileges, the ability to edit/delete reports is also provided

The screenshot shows the same Microsoft Internet Explorer window as the previous one, but the main content area now displays search results for "Match Previews/Fixtures". The search criteria are: Team "Under 10s", Opposition "BPFFJ (under 10's)", and Date Range "18/05/2005". The results table shows one result: "Team: Under 10s, Opposition: BPFFJ (under 10's), Date: 18/05/2005, Home/Away: Home, Result: 0 - 0". To the right of this row, there are "More Detail" and "Edit" links, which are circled in red. The status bar at the bottom shows various open tabs and the date "21/05".

**Match Preview-** If the creator has designated the match as a preview then the information displayed is limited to pre-match information and a starting line-up.

**HOT LINKS:**

- JOIN US - Players & Staff
- ARRANGE A FRIENDLY FIXTURE
- Get Involved:
- CLUB EVENTS
- Visit Our SPONSORS
- Who Are We?
- Our Players
- Our Staff
- Our Club:
- Club History
- Club Information
- Facilities
- Directions To Find Us
- League & Cup Information
- Further Information:
- Learn About "THE PTFC E-COMMUNITY"
- BBC Match Reports
- FA Charter Standard Scheme
- Further Links

**Meet Time:** 12:00:00  
**Kick Off Time:** 15:00:00  
**Kit:** away (blue)

**Match Preview:**

**Tactics Information:**  
 we're going to play an attacking style because last week we were under pressure from the outset because we played 5 at the back. get the ball forward and get on top of them early

**Formation:**  
 4-4-2 but I want you to play a sweeper role. Wingers tuck in because it's a narrow pitch

**Pre-Match Notes:**  
 get an early night. we win this and we're back in the promotion zone!

**Provisional Starting Lineup:**

Number:	Player Name:
1	steve brown
2	chris davies
3	ryan giggs
4	john smith
5	
6	
-	

If the match has been played and appropriate statistics have been entered, extra detail is displayed. The <cfif> function evaluates the role of the user and only displays the manager comments to those who have correct privileges ie. managers and coaches. This provides an area for managers to log information about opposing teams or player performance which they do not want to be displayed in the actual report for other members to see. Should they wish to view their notes again however, their own match report view will display the information.

**HOT LINKS:**

- Join Us
- Club Information
- Facilities
- Directions To Find Us
- League & Cup Information
- Further Information:
- Learn About "THE PTFC E-COMMUNITY"
- BBC Match Reports
- FA Charter Standard Scheme
- Further Links
- Contact Us

**Match Report:**

**Half Time Score:**  
 Poulton Town 1 - 0 Dartford Rangers

**Full Time Score:**  
 Poulton Town 2 - 0 Dartford Rangers

**Match Report:**  
 a superb win boys well done! great second goal ricky.

**Manager Comments:**  
 consider dropping andy next week as he looked lazy. next time we play this team man mark their number 7

**Manager Notes:**  
\*note this information is private to managers and club officials. It is not visible in the standard match report\*  
 super. Ricky was brilliant again. Danny maybe needs to work on his shooting. The opposition were slightly dirty. Didn't play it down the centre as much as last year and had a useful left winger. Very quick. Maybe man mark him next time

**Team Rating:** 1

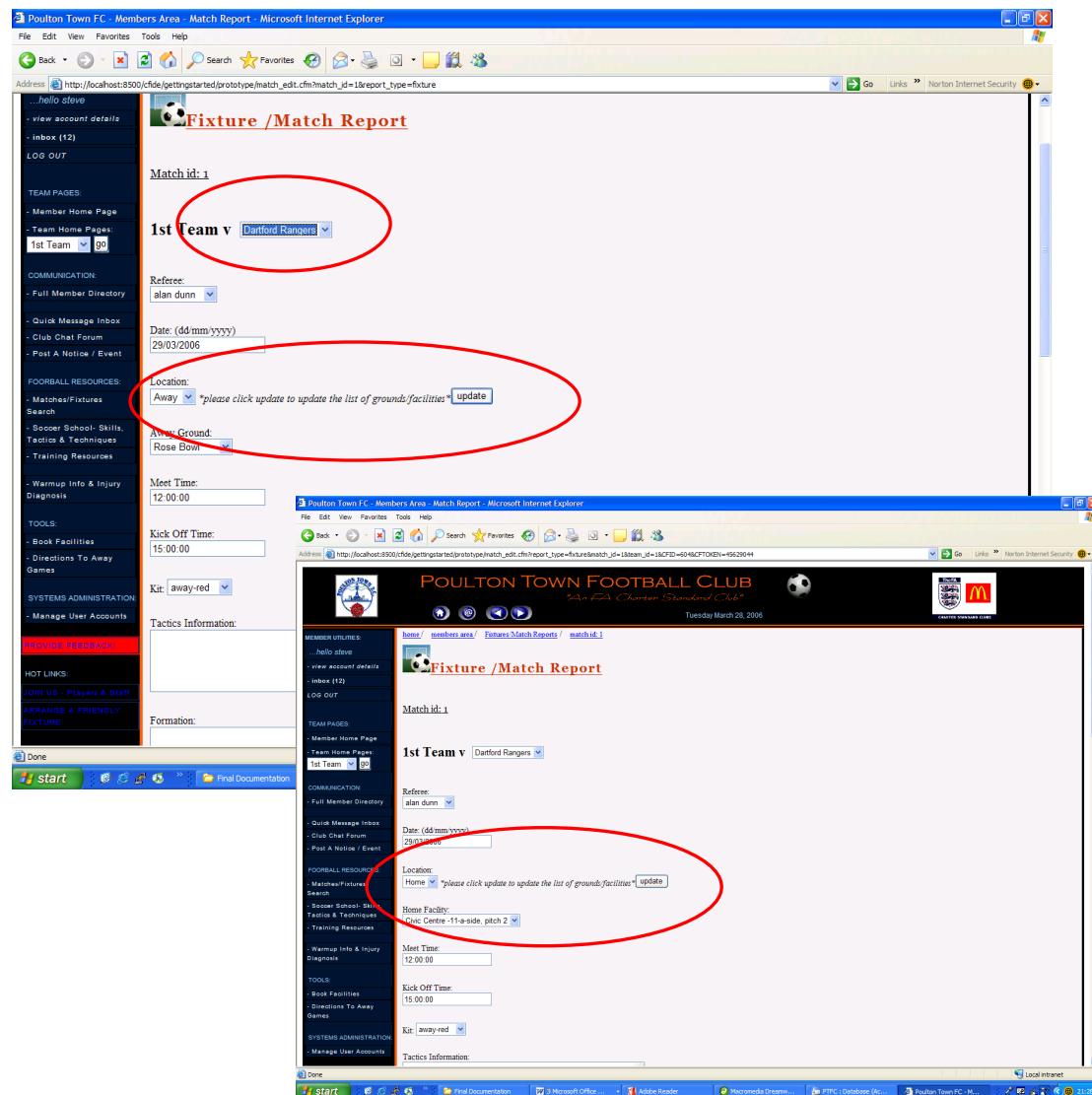
**Man Of The Match:** steve brown

**Player Stats:**

Player Name:	Goals:	Assists:	Rating:	Yellow Card:	Red Card:	Notes:
1 steve brown	0	1	10	1	1	great game
2 chris davies	1	0	1	0	0	
3 ryan giggs	0	0	5	0	0	
4 john smith	0	0	1	0	0	
5						
6						
-						

**Creating a match report** – selecting a team and location, then clicking the link from the menu to create a report displays the add/edit page. By supplying the team and home/away information to this page, appropriate oppositions and facilities are displayed for selection in dynamic drop-down menus ie. if more locations/oppositions are added they will appear. Oppositions are tagged to PTFC teams through the use of the ‘player\_birth\_year’ field. It was not possible to use unique names eg. Lancon Under 15s, as a unique name because the ‘age’ would change each season. The approach selected therefore allows the system to automatically calculate the correct team title, while also linking PTFC teams and oppositions using the field.

A disadvantage of having to retrieve the location from the database means changing the value of home/away will not automatically refresh the list, with utilised client-side technology is unable to achieve this feat effectively. Consequently an update button is provided next to the drop-down and the user is informed that they must click this to refresh the facilities menu. This is criticised in the evaluation.



The M:M relationship between players and matches means a table ‘player\_matches’ was created to store information relating to a particular player in a particular match. The contents are displayed in a table at the bottom of the report/preview. An edit link reveals a form where this data can be inputted.

Player Name:	Goals:	Assists:	Rating:	Yellow Card:	Red Card:	Notes:
1 steve brown	0	1	10	1	1	great game
2 chris davies	1	0	1	0	0	
3 ryan giggs	0	0	5	0	0	
4 john smith	0	0	1	0	0	
5						
6						
7						
8						
9						
10						
11						
Sub 1						
Sub 2						
Sub 3						

The difficulty of updating numerous player details at once means an alternative approach was taken. All players logged for the match are retrieved from the database and populated into the table (blank rows are added to the table if it is not full). Edit and delete links then refresh the page, but allow modification to the stored values for a particular player. This allows easier implementation, updating one record at a time rather than attempting to handle values relating to multiple records at once.

Player Name:	Goals:	Assists:	Rating:	Yellow Card:	Red Card:	Notes:	Modify:
1 steve brown	0	1	10	1	1	great game	<a href="#">edit</a>   <a href="#">delete</a>
2 chris davies	1	0	1	0	0		<a href="#">edit</a>   <a href="#">delete</a>
3 ryan giggs	0	0	5	0	0		<a href="#">edit</a>   <a href="#">create/edit player's match stats</a>
4 john smith	0	0	1	0	0		<a href="#">edit</a>   <a href="#">delete</a>
5							<a href="#">edit</a>   <a href="#">delete</a>
6							<a href="#">edit</a>   <a href="#">delete</a>
7							<a href="#">edit</a>   <a href="#">delete</a>
8							<a href="#">edit</a>   <a href="#">delete</a>
9							<a href="#">edit</a>   <a href="#">delete</a>
10							<a href="#">edit</a>   <a href="#">delete</a>
11							<a href="#">edit</a>   <a href="#">delete</a>
Sub 1							<a href="#">edit</a>   <a href="#">delete</a>
Sub 2							<a href="#">edit</a>   <a href="#">delete</a>
Sub 3							<a href="#">edit</a>   <a href="#">delete</a>

Clicking the edit link provides the ability to enter required information. Player names are retrieved from the players database by referencing the team\_id (stored in the match report) to provide a dynamic list of all available players. Save or cancel buttons are provided. Saving adds or edits a record in the player\_match table.

Player Name:	Goals:	Assists:	Rating:	Yellow Card:	Red Card:	Notes:	Modify:
steve brown	0	1	10	1	1	great game	<a href="#">Save Changes</a> <a href="#">cancel</a>
chris davies	1	0	1	0	0		<a href="#">edit</a> <a href="#">delete</a>
ryan giggs	0	0	5	0	0		<a href="#">edit</a> <a href="#">delete</a>
john smith	0	0	1	0	0		<a href="#">edit</a> <a href="#">delete</a>
Sub 1							<a href="#">edit</a> <a href="#">delete</a>
Sub 2							<a href="#">edit</a> <a href="#">delete</a>
Sub 3							<a href="#">edit</a> <a href="#">delete</a>

If a record already exists for that player in that match ie. the inserted record would not be unique (player\_id and match\_id), an error message is shown and the record is not updated/added.

Player Name:	Goals:	Assists:	Rating:	Yellow Card:	Red Card:	Notes:	Modify:
steve brown	0	1	10	1	1	great game	<a href="#">edit</a> <a href="#">delete</a>
chris davies	1	0	1	0	0		<a href="#">edit</a> <a href="#">delete</a>
ryan giggs	0	0	5	0	0		<a href="#">edit</a> <a href="#">delete</a>
john smith	0	0	1	0	0		<a href="#">edit</a> <a href="#">delete</a>
Sub 1							<a href="#">edit</a> <a href="#">delete</a>
Sub 2							<a href="#">edit</a> <a href="#">delete</a>
Sub 3							<a href="#">edit</a> <a href="#">delete</a>

If the update is successful then the page is re-displayed with a verification message

The screenshot shows a Microsoft Internet Explorer window displaying the Poulton Town Football Club website. The URL in the address bar is [http://localhost:8500/cfde/gettingstarted/prototype/player\\_match\\_edit.cfm?match\\_id=1&player\\_id\\_edit=0&status=success:details%20updated!&report\\_type=fixture&CFID=604&CFTOKEN=45629044](http://localhost:8500/cfde/gettingstarted/prototype/player_match_edit.cfm?match_id=1&player_id_edit=0&status=success:details%20updated!&report_type=fixture&CFID=604&CFTOKEN=45629044). The page title is "Poulton Town FC - Members Area - Match Report - Player Statistics". The main content area shows a table of player statistics for a match between "1st Team" and "Fleetwood Gym". A red oval highlights the message "success:details updated!" above the table. The table has columns for Player Name, Goals, Assists, Rating, Yellow Card, Red Card, Notes, and Modify. The "Notes" column for the first player contains the text "great game". The "Modify" column for each row contains links for "edit" and "delete".

	Player Name:	Goals:	Assists:	Rating:	Yellow Card:	Red Card:	Notes:	Modify:
1	steve brown	0	1	10	1	1	great game	<a href="#">edit</a>   <a href="#">delete</a>
2	chris davies	1	0	1	0	0		<a href="#">edit</a>   <a href="#">delete</a>
3	ryan giggs	0	0	5	0	0		<a href="#">edit</a>   <a href="#">delete</a>
4	john smith	0	0	1	0	0		<a href="#">edit</a>   <a href="#">delete</a>
5								<a href="#">edit</a>   <a href="#">delete</a>
6								<a href="#">edit</a>   <a href="#">delete</a>
7								<a href="#">edit</a>   <a href="#">delete</a>
8								<a href="#">edit</a>   <a href="#">delete</a>
9								<a href="#">edit</a>   <a href="#">delete</a>
10								<a href="#">edit</a>   <a href="#">delete</a>
11								<a href="#">edit</a>   <a href="#">delete</a>
Sub 1								<a href="#">edit</a>   <a href="#">delete</a>
Sub 2								<a href="#">edit</a>   <a href="#">delete</a>
Sub 3								<a href="#">edit</a>   <a href="#">delete</a>

## 7. Injury Diagnosis & Stretching Advice

When the user loads the tool they are asked to select injury diagnosis or stretches. This displays the appropriate search form and selects the appropriate database table. A disclaimer is also shown.

The screenshot shows a Microsoft Internet Explorer window displaying the Poulton Town Football Club website. The URL in the address bar is [http://localhost:8500/cfide/gettingstartedprototype/injury\\_search.cfm?body\\_area=&advice\\_type=](http://localhost:8500/cfide/gettingstartedprototype/injury_search.cfm?body_area=&advice_type=). The page title is "Poulton Town FC - Members Area - Injury Diagnosis". The main content area is titled "Warmups & Injury Diagnosis". It contains a message: "Take care of your most important asset. Get advice on warming up effectively or get assistance in diagnosing an injury." Below this is a dropdown menu labeled "J. Select type of advice: select". A red box highlights a disclaimer at the bottom of the page: "Disclaimer: Please note that Poulton Town FC offers this resource to assist its members in finding information to assist them in improving their health body condition and dealing with injuries. While the club make every attempt to ensure the quality of information contained is of the highest standard, Poulton Town FC can take no responsibility for any injury/functional problems which result from the information provided as part of this resource. Members use this facility at their own risk. By using this resource you are agreeing to these terms and conditions. Professional advice should always be obtained prior to using any information provided in the resource. Thankyou." The left sidebar contains a navigation menu with various links, including "Warmup Info & Injury Diagnosis" which is circled in red.

The clickable map is then displayed. Clicking on an appropriate area of the body then automatically enters the body area into the search form and results are displayed.

The screenshot shows a Microsoft Internet Explorer window displaying the Poulton Town FC website. The URL in the address bar is [http://localhost:8500/cfide/gettingstartedprototype/injury\\_search.cfm?body\\_area=arm%20and%20hand&advice\\_type=injury](http://localhost:8500/cfide/gettingstartedprototype/injury_search.cfm?body_area=arm%20and%20hand&advice_type=injury). The main content area shows a search form with "J. Select type of advice: injury diagnosis" and "2. Click the relevant area of the body." Below this is a large, interactive human body silhouette. The "arm and hand" area is highlighted in blue, indicating it has been selected. At the bottom of the page, there is a table with columns for "Body Area", "Name", "Symptoms", "Injury Details", and "Modify". The "Body Area" row shows "arm and hand" and "broken finger" respectively. The "Symptoms" column contains "extreme pain in the finger when touched, swelling". The "Injury Details" column contains a link "further information". The "Modify" column contains a link "edit". The left sidebar contains a navigation menu with various links, including "Provider Feedback" which is highlighted in red.

The code required to implement the clickable map is included. It breaks the image into sections, meaning if the cursor is clicked within a particular region, the page is re-loaded with the region provided in the URL. The form then retrieves this value from the URL for use:

```
<><em>2. Click the relevant area of the body:</em><br />

<map name="MyMap">
<cfoutput>
<!---front of body --&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=head&amp;advice_type=#URL.advice_type#" coords="70,230,110,315" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=lower leg&amp;advice_type=#URL.advice_type#" coords="70,315,110,390" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=foot&amp;advice_type=#URL.advice_type#" coords="70,390,110,440" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=lower leg&amp;advice_type=#URL.advice_type#" coords="130,315,170,390" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=upper leg&amp;advice_type=#URL.advice_type#" coords="130,230,170,315" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=foot&amp;advice_type=#URL.advice_type#" coords="130,390,170,440" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=body&amp;advice_type=#URL.advice_type#" coords="80,83,155,224" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=head and neck&amp;advice_type=#URL.advice_type#" coords="82,0,149,70" /&gt;
&lt;area shape="polygon" href="injury_search.cfm?body_area=arm and hand&amp;advice_type=#URL.advice_type#" coords="40,89,80,89,55,264,0,264" /&gt;
&lt;area shape="polygon" href="injury_search.cfm?body_area=arm and hand&amp;advice_type=#URL.advice_type#" coords="159,140,159,87,180,87,244,263,199,263" /&gt;
/&gt;
<!---back of body --&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=upper leg&amp;advice_type=#URL.advice_type#" coords="319,230,359,315" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=lower leg&amp;advice_type=#URL.advice_type#" coords="320,315,360,390" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=foot&amp;advice_type=#URL.advice_type#" coords="320,390,360,440" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=upper leg&amp;advice_type=#URL.advice_type#" coords="374,230,419,315" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=lower leg&amp;advice_type=#URL.advice_type#" coords="376,315,422,390" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=foot&amp;advice_type=#URL.advice_type#" coords="377,390,423,440" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=back&amp;advice_type=#URL.advice_type#" coords="330,79,399,224" /&gt;
&lt;area shape="rect" href="injury_search.cfm?body_area=head and neck&amp;advice_type=#URL.advice_type#" coords="330,-1,399,69" /&gt;
&lt;area shape="polygon" href="injury_search.cfm?body_area=arm and hand&amp;advice_type=#URL.advice_type#" coords="289,87,330,87,300,262,249,262" /&gt;
&lt;area shape="polygon" href="injury_search.cfm?body_area=arm and hand&amp;advice_type=#URL.advice_type#" coords="400,140,400,87,430,87,474,233,474,263,439,263" /&gt;
&lt;/cfoutput&gt;
&lt;/map&gt;</pre>

```

Clicking the more detail link in the results displays all the content of the injury/stretch advice. The id is passed in the URL.

Poulton Town FC - Members Area - Tactics Resource - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address [http://localhost:8500/cfide/gettingstarted/prototype/injury\\_detail.cfm?injury\\_id=7](http://localhost:8500/cfide/gettingstarted/prototype/injury_detail.cfm?injury_id=7)

**Poulton Town FOOTBALL CLUB**  
An FA Charter Standard Club

Tuesday March 28, 2006

**MEMBER UTILITIES:**

- ...hello steve
- view account details
- inbox (12)
- LOG OUT**

**TEAM PAGES:**

- Member Home Page
- Team Home Pages:
  - 1st Team
  - go

**COMMUNICATION:**

- Full Member Directory
- Quick Message Inbox
- Club Chat Forum
- Post A Notice / Event

**FOOTBALL RESOURCES:**

- Matches/Fixtures Search
- Soccer School- Skills, Tactics & Techniques
- Training Resources
- Warmup Info & Injury Diagnosis

**TOOLS:**

- Book Facilities
- Directions To Away Games

**SYSTEMS ADMINISTRATION:**

- Manage User Accounts

Injury: broken finger

Injury id: 7

Symptoms: extreme pain in the finger when touched, swelling

Treatments: seek medical advice at hospital

Advice: go to A and E

Expected Recovery Time: 2 weeks for outfield player, 2 months for goalkeeper  
*\*note this is meant as a guide only\**

Description: most common for goalkeepers, breaks to the bone cannot be rectified by plaster and therefore are bandaged. recovery time is usually quite quick. SO STOP MOANING!

[Return to injury diagnosis](#)

If the user has the correct privileges, then edit is displayed next to the more information link in the results. This links the user to a page where details can be changed. The Id is supplied in the URL

Injury id: 7

Name:

Body Area:

Symptoms:

Treatments:

Advice:

Expected Recovery Time:

Description:  
most common for goalkeepers, breaks to the bone cannot be rectified by plaster and therefore are bandaged, recovery time is usually quite quick. SO STOP MOANING!

[undo changes](#)

If no id is supplied in the URL, then a blank form is displayed. This allows creation of a new injury/stretch. This approach increases the efficiency of the system by reducing the number of separate pages needed for editing and adding.

Injury id:

Name:

Body Area:

Symptoms:

Treatments:

Advice:

Expected Recovery Time:

Description:

[undo changes](#)

## 8. Training Plans

When the option is selected from the menu, a search form is displayed which can be used to obtain required information. All users have the option to click ‘more detail’ which displays the entire details of the training plan. Users with edit/add privileges are also provided with the ‘edit’ and ‘create training plan’ options.

Clicking the heading of a table changes the ordering of the results by altering the ‘sort by’ value in the query. This information is supplied to the query via a hidden form field, so clicking the link changes the value without the user needing to specify it explicitly. The column which the results are currently sorted by is highlighted in bold, with the hyperlink removed. Links to pages containing more detail, and edit/add capabilities are implemented in the same way as for the injury diagnosis tool

Training Plan ID:	Overview:	Intensity	Area Of Focus	Min Age	Max Age	Content	Modify:
18	defensive routines	2	attacking	9	14	<a href="#">more detail</a>	<a href="#">edit</a>
19	fitness work	2	attacking	9	17	<a href="#">more detail</a>	<a href="#">edit</a>
20	general workout	2	attacking	8	10	<a href="#">more detail</a>	<a href="#">edit</a>
21	ridges	2	defending	9	13	<a href="#">more detail</a>	<a href="#">edit</a>

As explained in section 1 of this appendix, session variables are used to maintain a list of recent searches. Clicking re-loads the search criteria and displays the results. A potential problem with using session variables for this purpose is that the recent searches are lost when the user logs out. This is criticised in evaluation

Recent Searches: [non-keyword search](#) | [non-keyword search](#) | [non-keyword search](#) | (hover for more details)

search parameters:  
training plan id =  
keywords =  
area\_of\_focus = attacking  
intensity = 2 - 5  
age range = 9 - 19

## 9. Soccer School – Tactics & Tips

This tool is implemented using the same techniques used for training plans, except the information stored in the database is different.

The screenshot shows a Microsoft Internet Explorer window titled "Poulton Town FC - Members Area - Tactics Resource - Microsoft Internet Explorer". The address bar shows the URL: [http://localhost:8500/cfide/gettingstarted/prototype/tactics\\_search.cfm](http://localhost:8500/cfide/gettingstarted/prototype/tactics_search.cfm). The main content area displays a section titled "Soccer School -Tactics, Techniques & Skills" with a sub-section header "All the information you could ever want to help you become a better player!". Below this is a diagram of a soccer pitch with various tactics marked. A text block states: "Our own club-owned knowledge resource provides information on both individual and team tactics, as well as tips for individuals on how to improve technique, skills etc". There are several input fields and dropdown menus for creating a new tip, including "Tactic ID" (with a placeholder "[ ]"), "Keywords" (with a placeholder "[ ]"), and "Area Of Focus" (set to "attacking"). A search button and a clear button are also present. Below these fields is a "Recent Searches" section with links: "non-keyword search", "non-keyword search", and "non-keyword search". A "search parameters" box shows the query: "tactic id: \* keywords: \* area of focus: goalkeeping". A table titled "Your search returned 5 results:" lists five entries:

Tip ID:	Overview:	Area Of Focus	Summary:	Content:	Modify:
1	goals HELLO	attacking	summary here	<a href="#">more detail</a>	<a href="#">edit</a>
19	pew tactic2	attacking	summary here2	<a href="#">more detail</a>	<a href="#">edit</a>
20	great tactic here	attacking	sum	<a href="#">more detail</a>	<a href="#">edit</a>
21	Kick it long	attacking	long ball	<a href="#">more detail</a>	<a href="#">edit</a>

## 10.Notices

Selecting post notice/event on the navigation bar displays the notices/events page. This provides a list of all existing notices/events (note this merges with phase 4 due to the inclusion of events as part of notices). From here users have the ability to add new events/notices, or edit/delete one they have posted themselves (systems admin have ability to edit/delete all). This functionality is achieved by storing the user\_id of the creator and checking it against the current logged on user.

The screenshot shows the 'Notice/Event - Add/Edit/Delete' page. On the left, there's a sidebar with various links like 'Full Member Directory', 'Guide Message Inbox', 'Club Chat Forum', etc. A red circle highlights the 'Book Facilities' link under 'TOOLBOX'. The main area displays a table of notices:

Title	Content	Date Added	Audience of	Event	Author	Modify
training	this week at 6 please feel free to explore this site. This area offers access to NEW Poulton Town FC e-community!	2006-01-01 00:00:00.0	Under 15s	Yes	jhu2ab	<a href="#">edit</a>   <a href="#">delete</a>
social	welcome to the new Poulton Town e-community! members acccess log in by clicking the link on the left navigation bar.	2006-01-04 00:00:00.0	Public	No	jhu2ab	<a href="#">edit</a>   <a href="#">delete</a>
Night Out	horse racing	2006-02-03 00:00:00.0	1st Team	Yes	jhu2ab	<a href="#">edit</a>   <a href="#">delete</a>
Hello all members	comedy club	2006-03-16 00:00:00.0	Public	Yes	jhu2ab	<a href="#">edit</a>   <a href="#">delete</a>
	welcome to the new Poulton Town e-community! members acccess log in by clicking the link on the left navigation bar.	2006-03-17 00:00:00.0	Members	No	jhu2ab	<a href="#">edit</a>   <a href="#">delete</a>
	we need to send them off to the league	2006-03-17 00:00:00.0	1st Team	No	jhu2ab	<a href="#">edit</a>   <a href="#">delete</a>
	Moving to view the new website system all welcome	2006-03-15 00:00:00.0	Public	Yes	manager	<a href="#">edit</a>   <a href="#">delete</a>

When the user selects to add notice, they are presented with a form to collect required information. Phase 4 implementation allows notices to be defined as events (since an event will require a notice). Consequently a drop-down menu defines whether the notice is an event or not. An optional field is provided to collect the event date (for use in the calendar). A further drop down menu allows the target audience to be defined for the notice. Notices can be public, member-specific, team-specific or all. This is reflected by where the notice is displayed. Only events are posted on the events calendar.

The screenshot shows the 'Notice/Event - Add/Edit/Delete' page for a new notice. The sidebar is identical to the previous screenshot. The main form has the following fields:

- notice id: (input field)
- Title: (input field)
- Target Audience (who is the notice for): Public Website (in home page) (dropdown menu)
- Is This Notice about an event? (dropdown menu: Yes/No) Event Date (if specifying event): (input field)
- Content: (text area)
- Save Changes (button)
- Return to Notices (link)

The screen captures below show how different messages are displayed on different pages depending on which target audience is selected.



*Home page*

*1<sup>st</sup> team page*

**LATEST NEWS:**

**Hello all members** (club-wide notice) - added: 17 Mar 2006  
welcome to the new Poulton Town e-community! Part of the club's commitment to your development! please explore the site to see what you can do!

**Please return sign on forms by friday** - added: 17 Mar 2006  
we need to send them off to the league

**social** - added: 03 Feb 2006  
horse racing

**LATEST CLUB NEWS:**

Welcome to the BRAND NEW Poulton Town FC e-community! - added: 04 Jan 2006  
please feel free to explore this site. This area displays information to the public. To access the members area please log-in by clicking the link on the left navigation bar.

Meeting to view the new website system all welcome - added: 15 Mar 2006  
Please feel free to attend and see the exciting new system!

Night Out - added: 16 Mar 2006

*Member's home page*

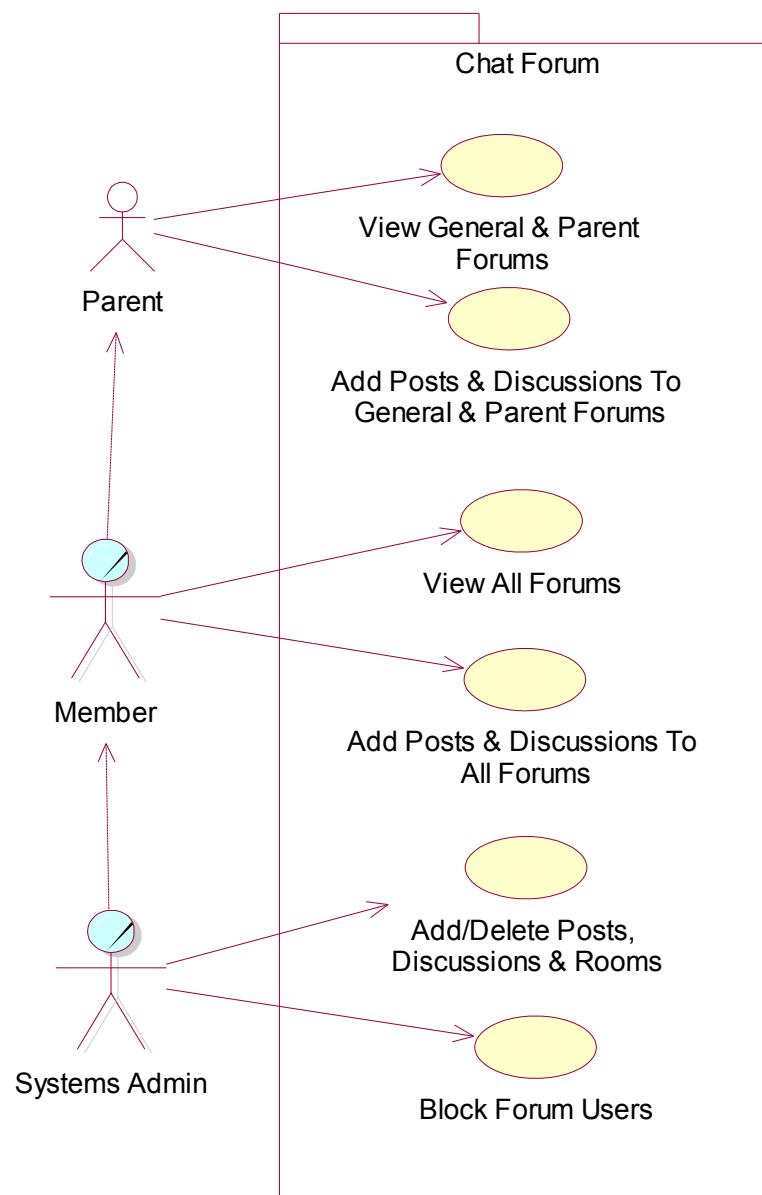
**CLUB MEMBER LATEST NEWS:**

**Hello all members** - added: 17 Mar 2006  
welcome to the new Poulton Town e-community! Part of the club's commitment to your development! please explore the site to see what you can do!

## ***Appendix H –Phase 2: E-Community –Chat Forum***

### **1. Chat Forum Design**

Use-Case Diagram



## Page Designs

Chat forum home page:

Forum	Topics	Posts
Social	1	3
General Chat	4	23
Events	4	3
Team Rooms		
Under 12s	2	2
Under 13s	3	5
<i>Etc etc....</i>		

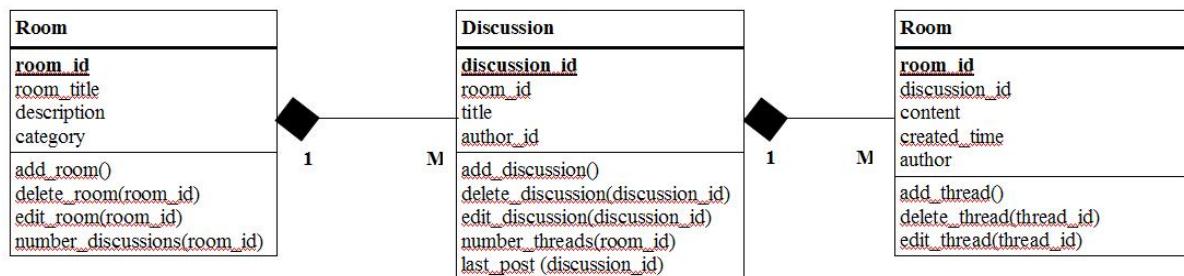
Inside a Room:

Discussions	Posts	Last Post
Hello everyone	2	Username date
What do people think of?	3	Username date
<i>Etc etc....</i>		

Inside a Discussion:

Comments	Info
Comment 1	Username date
Comment 2	Username date
<i>Etc etc....</i>	

## Design-Level Class Diagram



## 2. Technical Manual Excerpt – Explanation Of Functionality & Code

### a) Link provided on member's navigation bar

Poulton Town FC - Members Area - Tactics Resource - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Go Links Norton Internet Security

Address http://localhost:8500/cfde/gettingstartedprototype/member\_home.cfm

**Poulton Town Football Club** An FA Charter Standard Club Thursday April 6, 2006

**MEMBER UTILITIES:**

- hello steve
- view account details
- inbox (1)
- LOG OUT**

**TEAM PAGES:**

- Member Home Page
- Team Home Pages:
  - 1st Team **go**

**COMMUNICATION:**

- Full Member Directory
- Quick Message Inbox
- Club Chat Forum
- Post A Notice / **use our chat rooms to get to know each other**

**FOOTBALL RESOURCES:**

- Matches/Fixtures Search
- Soccer School- Skills, Tactics & Techniques
- Training Resources
- Warmup Info & Injury Diagnosis

**TOOLS:**

- Book Facilities
- Directions To Away Games

**SYSTEMS ADMINISTRATION:**

- Manage User Accounts

**CLUB MEMBER LATEST NEWS:**

Hello all members - added: 17 Mar 2006

welcome to the new Poulton Town e-community! Part of the club's commitment to your development! please explore the site to see what you can do!

http://localhost:8500/cfde/gettingstartedprototype/chat\_forum\_home.cfm

Local intranet

### b) Chat forum landing page (menu of rooms) –note ‘delete’ on the right and ‘new room’ only appear for systems administrators

Poulton Town FC - Members Area - Chat Forum - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Go Links Norton Internet Security

Address http://localhost:8500/cfde/gettingstartedprototype/chat\_forum\_home.cfm

**Poulton Town Football Club** An FA Charter Standard Club Thursday April 6, 2006

**MEMBER UTILITIES:**

- hello steve
- view account details
- inbox (1)
- LOG OUT**

**TEAM PAGES:**

- Member Home Page
- Team Home Pages:
  - 1st Team **go**

**COMMUNICATION:**

- Full Member Directory
- Quick Message Inbox
- Club Chat Forum
- Post A Notice / Event

**FOOTBALL RESOURCES:**

- Matches/Fixtures Search
- Soccer School- Skills, Tactics & Techniques
- Training Resources
- Warmup Info & Injury Diagnosis

**TOOLS:**

- Book Facilities
- Directions To Away Games

**SYSTEMS ADMINISTRATION:**

- Manage User Accounts

**chat forum home | new room**

Forum	Topics	Posts	
<b>Social:</b>			
<a href="#">Poulton Town Events</a>	0	0	<a href="#">delete</a>
<i>chat about goings on at social events</i>			
<a href="#">General Chat</a>	2	3	<a href="#">delete</a>
<i>Chat about whatever you want in here. Make some new friends!</i>			
<b>Team Specific Rooms :</b>			
<a href="#">1st team</a>	1	0	<a href="#">delete</a>
<i>dedicated forum for team discussions</i>			
<a href="#">Reserves</a>	0	0	<a href="#">delete</a>
<i>dedicated forum for team discussions</i>			
<a href="#">under 11s</a>	1	2	<a href="#">delete</a>
<i>dedicated forum for team discussions</i>			
<a href="#">under 12s</a>	0	0	<a href="#">delete</a>
<i>forum for the super under 12s!</i>			
<a href="#">under 9s</a>	0	0	<a href="#">delete</a>
<i>dedicated forum for team discussions</i>			
<b>Other Rooms:</b>			
<a href="#">Parents Room</a>	1	0	<a href="#">delete</a>
<i>A forum for parents to post their opinions/ideas</i>			
<a href="#">Health &amp; Fitness Advice</a>	1	0	<a href="#">delete</a>
<i>A forum to discuss health and fitness issues</i>			

http://localhost:8500/cfde/gettingstartedprototype/chat\_forum\_home.cfm

Local intranet

c) Selecting a room displays the current discussions it contains. Again, ‘delete’ only appears for systems administrators

d) Selecting a specific ‘discussion’ displays all the posts it contains. Once again ‘delete’ only appears for systems administrators, allowing them to remove inappropriate content. In addition to the comment, a thread also displays the user name of the member who wrote it and the date/time it was added.

e) the ability to add a post/thread is available to all members (adding a forum/discussion is an identical interface). The user's comment is entered and 'create' adds it to the discussion. Cancel returns the user to the discussion

Poulton Town FC - Members Area - Chat Forum - New Post - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites Favorites Mail Links Norton Internet Security

Address: http://localhost:8500/cfide/gettingstarted/prototype/new\_thread.cfm?discussion\_id=3&room\_id=3

POULTON TOWN FOOTBALL CLUB  
An FA Charter Standard Club

Thursday April 6, 2006

MEMBER UTILITIES:  
... hello steve  
- view account details  
- inbox (1)  
LOG OUT

TEAM PAGES:  
- Member Home Page  
- Team Home Pages:  
1st Team go

COMMUNICATION:  
- Full Member Directory  
- Quick Message Inbox  
- Club Chat Forum  
- Post A Notice / Event

FOOTBALL RESOURCES:  
- Matches/Fixtures  
Search  
- Soccer School: Skills, Tactics & Techniques  
- Training Resources  
- Warmup Info & Injury Diagnosis

TOOLS:  
- Book Facilities  
- Directions To Away Games

SYSTEMS ADMINISTRATION:  
- Manage User Accounts

Content:

Create cancel

Done Local intranet

Start Final Documents... 1. (b) Table OFC... 2. (a) Phase 1-4... 3. Phase 2.doc... 4. (Apx.H) Phase2... 5. Adobe Reader... Poulton Town FC... 14:40

## **Appendix I –Phase 3: E-Community: Member Directory & Communication**

### **1. Page Designs & Design-Level Class Diagram**

#### Screen Designs:

Search page:

The image displays two screenshots of the Poulton Town FC website, illustrating the Member Directory and Member Details pages.

**Member Directory Page:**

- Header:** Poulton Town FC logo, Utilities Bar, spinning ball, Charter Logo.
- Left Sidebar:** Welcome <>, LOG OUT, HEADING, Link, Link, HEADING, Link, Link, Link, NAVIGATION BAR, LOGIN, HEADING, Link, Link, Link, HEADING, Link, Link, Link, HEADING, Link, Link, Link, Google search input field.
- Content Area:** home / members area / member directory, MEMBER DIRECTORY, Here you can look-up your fellow members and contact them, Search Functionality input field, Results table:

Name	Role	More Information	Contact
Member 1	Coach	<a href="#">Click Here For More Information</a>	<a href="#">Send message</a>
Member 2	Manager	<a href="#">Click Here For More Information</a>	<a href="#">Send message</a>
Etc etc....			

- Further Information:** Content, Content, Content, Content, Content, Content, Content, Content.

**Member Details Page:**

- Header:** Poulton Town FC logo, Utilities Bar, spinning ball, Charter Logo.
- Left Sidebar:** Welcome <>, LOG OUT, HEADING, Link, Link, HEADING, Link, Link, Link, Google search input field.
- Content Area:** home / members area / member directory / member name, MEMBER DETAILS, Name \_\_\_\_\_, Date Of Birth \_\_\_\_\_, Contact Information, Tel \_\_\_\_\_, E-Mail \_\_\_\_\_, Etc etc, Back button.

More information page:

Design-Level Class Diagram:

member_messages
<u>message_id</u> <u>from_id</u> <u>to_id</u> <u>subject</u> <u>content</u> <u>tme_sent</u> <u>old</u>
<u>write_new(username)</u> <u>reply(username, to_id, subject)</u> <u>delete(message_id)</u> <u>display_inbox(username)</u> <u>mark_read(message_id, old)</u>

## 2. Technical Manual Exert – Explanation Of Functionality & Code

### A) MEMBER DIRECTORY

- a) When chosen from the member bar, the member directory homepage allows selection of the type of member.

- b) Results of search are displayed in a table with option to select more information if the user has the correct access privileges A link is also provided to the internal messaging facility so the member can be contacted

Name	Role	Qualifications	Experience	More Information	Contact:
chris davies	goalkeeper coach   systems administrator   Reserves	ex-Ireland international goalkeeper	FA Coach	<a href="#">more detail</a>	<a href="#">send internal message</a>
dave spencer	Director Of Football   systems administrator   1st Team	West Lancashire Youth team coach	FA Approved Coach, First Aid Certified	<a href="#">more detail</a>	<a href="#">send internal message</a>
overkeen dad	Head Coach   events organiser   1st Team	under 12s manager	none	<a href="#">more detail</a>	<a href="#">send internal message</a>

c) Once the member type is selected, advanced searching functionality is provided, varying in approach depending on the type of users selected

The screenshot shows a Microsoft Internet Explorer window with the title "Poulton Town FC - Member Directory - Microsoft Internet Explorer". The address bar shows the URL [http://localhost:8500/cfide/gettingstarted/prototype/member\\_search.cfm](http://localhost:8500/cfide/gettingstarted/prototype/member_search.cfm). The page header includes the club's logo, name, and an FA Charter Standard Club badge. A navigation menu on the left lists various club services like Member Home Page, Team Home Pages, Communication, Football Resources, Tools, and Systems Administration. The main content area is titled "E-Community Member Directory" and contains a search form. The search results table has columns for Name, Role, Qualifications, Experience, More Information, and Contact. One result is shown for "chris davies" with the role "goalkeeper coach | systems administrator | Reserves", qualifications "ex-Ireland international goalkeeper", experience "FA Coach", and a "More detail" link.

d) clicking more detail reveals more information stored about the member:

The screenshot shows a Microsoft Internet Explorer window with the title "Poulton Town FC - Member Area - Tactics Resource - edit - Microsoft Internet Explorer". The address bar shows the URL [http://localhost:8500/cfide/gettingstarted/prototype/member\\_info.cfm?PTFCUsername=jhs2ab&PTFRole=&system%20administrator&team\\_id=1](http://localhost:8500/cfide/gettingstarted/prototype/member_info.cfm?PTFCUsername=jhs2ab&PTFRole=&system%20administrator&team_id=1). The page header and menu are identical to the previous screenshot. The main content area is titled "Member Details" and displays the member's profile for "Name: steve brown". It shows the username "jhs2ab", access level "E-community access level", and system administrator status. It also lists the date of birth "18/03/1984" and contact information including email, home telephone, mobile telephone, and address. A "Return to search" link is at the bottom.

f) when the 'send internal message' link is clicked, the write\_message page is displayed with the id inputted automatically

Poulton Town FC - Members Area - New Message - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Home Search Favorites Links Norton Internet Security

Address: http://localhost:8500/cide/getmsg/ptfc/prototype/write\_message.cfm?to\_id=chris&subject= Thursday April 6, 2006

**Poulton Town FOOTBALL CLUB** An FA Charter Standard Club

MEMBER UTILITIES:

- hello steve
- view account details
- inbox (1)
- LOG OUT

TEAM PAGES:

- Member Home Page
- Team Home Pages:  
1st Team

COMMUNICATION:

- Full Member Directory
- Quick Message Inbox
- Club Chat Forum
- Post A Notice / Event

FOOTBALL RESOURCES:

- Matches/Fixtures Search
- Soccer School- Skills, Tactics & Techniques
- Training Resources

TOOLS:

- Book Facilities
- Directions To Away Games

SYSTEMS ADMINISTRATION:

- Manage User Accounts

inbox (1) | new message

[back to inbox](#)

To: chris

Note: this is an internal messaging system, not email.

Subject:

Content:

[cancel](#)

Done Local intranet

## B) COMMUNCIATION FACILITY –INTERNAL MESSAGING

a) when the user logs on the content of their inbox is stated on the landing page and the menu

The screenshot shows a Microsoft Internet Explorer window displaying the Poulton Town Football Club website. The URL in the address bar is [http://localhost:8500/cfde/gettingstarted/prototype/member\\_home.cfm](http://localhost:8500/cfde/gettingstarted/prototype/member_home.cfm). The page title is "Poulton Town FC - Members Area - Tactics Resource - Microsoft Internet Explorer". The main content area displays a message from "Hello steve (@a2tab)" with the subject "Hello all members" and a timestamp of "added: 17 Mar 2006". A red circle highlights the message content. On the left, a vertical navigation menu is visible, and another red circle highlights the "inbox (1)" link under the "MEMBER UTILITIES" section.

b) the inbox shows messages received (highlighted in bold if unread)

The screenshot shows a Microsoft Internet Explorer window displaying the Poulton Town Members Internal Messaging Service. The URL in the address bar is [http://localhost:8500/cfde/gettingstarted/prototype/member\\_messages\\_inbox.cfm?error=1](http://localhost:8500/cfde/gettingstarted/prototype/member_messages_inbox.cfm?error=1). The page title is "Poulton Town FC - Members Area - Member Inbox - Microsoft Internet Explorer". The main content area displays a table of messages under the heading "steve's messages". The table has columns for "From:", "Subject:", and "Sent:". The first message is from "chris davies (chris)" with the subject "**RE:RE:free?**" and sent on "Tuesday 14 March 2006". The second message is from "chris davies (chris)" with the subject "**RE:RE:free?**" and sent on "Tuesday 14 March 2006". The third message is from "chris (chris)" with the subject "**free?**" and sent on "Tuesday 18 January 2005". The "inbox (1) | new message" link is also visible above the message list.

c) clicking the subject allows the message to be read

Poulton Town FC - Members Area - Message - Microsoft Internet Explorer

POULTON TOWN FOOTBALL CLUB  
An FA Charter Standard Club

Thursday April 6, 2006

[inbox \(12\)](#) | [new message](#)

[back to inbox](#)

[reply](#)

From: ryan giggs (player) Received: 04 Jun 2006

"hello buddy, are you still on for training this weekend? thanks for helping out!"

MEMBER UTILITIES:  
[...hello steve](#)  
[view account details](#)  
[inbox \(12\)](#)  
[LOG OUT](#)

TEAM PAGES:  
[Member Home Page](#)  
[Team Home Pages](#)  
[1st Team](#) [go]

COMMUNICATION:  
[Full Member Directory](#)  
[Quick Message Inbox](#)  
[Club Chat Forum](#)  
[Post A Notice / Event](#)

FOOTBALL RESOURCES:  
[Matches/Fixtures Search](#)  
[Soccer School - Skills, Tactics & Techniques](#)  
[Training Resources](#)  
[Warmup Info & Injury Diagnosis](#)

TOOLS:  
[Book Facilities](#)  
[Directions To Away Games](#)

SYSTEMS ADMINISTRATION:  
[Manage User Accounts](#)

c) ‘write message’ option displays this page. Member directory can be accessed to look-up a member’s user id

Poulton Town FC - Members Area - New Message - Microsoft Internet Explorer

POULTON TOWN FOOTBALL CLUB  
An FA Charter Standard Club

Thursday April 6, 2006

[inbox](#) | [new message](#)

[back to inbox](#)

To:  member\_directory  
 \*note: this is an internal messaging system, not email.

Subject:

Content:

[cancel](#)

MEMBER UTILITIES:  
[...hello ryan](#)  
[view account details](#)  
[inbox](#)  
[LOG OUT](#)

TEAM PAGES:  
[Member Home Page](#)  
[Team Home Pages](#)  
[1st Team](#) [go]

COMMUNICATION:  
[Full Member Directory](#)  
[Quick Message Inbox](#)  
[Club Chat Forum](#)

FOOTBALL RESOURCES:  
[Matches/Fixtures Search](#)  
[Soccer School - Skills, Tactics & Techniques](#)  
[Training Resources](#)  
[Warmup Info & Injury Diagnosis](#)

TOOLS:  
[Directions To Away Games](#)

[SHARE FEEDBACK](#)

HOT LINKS:  
[JOIN US - Players & Staff](#)

d) empty and full inboxes display appropriate messages

This screenshot shows a Microsoft Internet Explorer window for the Poulton Town Football Club Members Area. The address bar shows the URL: [http://localhost:8500/cfde/gettingstartedprototype/member\\_messages\\_inbox.cfm?error=1&CFTOKEN=45629044](http://localhost:8500/cfde/gettingstartedprototype/member_messages_inbox.cfm?error=1&CFTOKEN=45629044). The page title is "Poulton Town Members Internal Messaging Service". The left sidebar has a "MEMBER UTILITIES" section with links for "hello ryan", "view account details", "inbox", and "LOG OUT". Under "TEAM PAGES", there is a "Member Home Page" link. The main content area displays "ryan's messages" and a message stating "you have no messages".

or

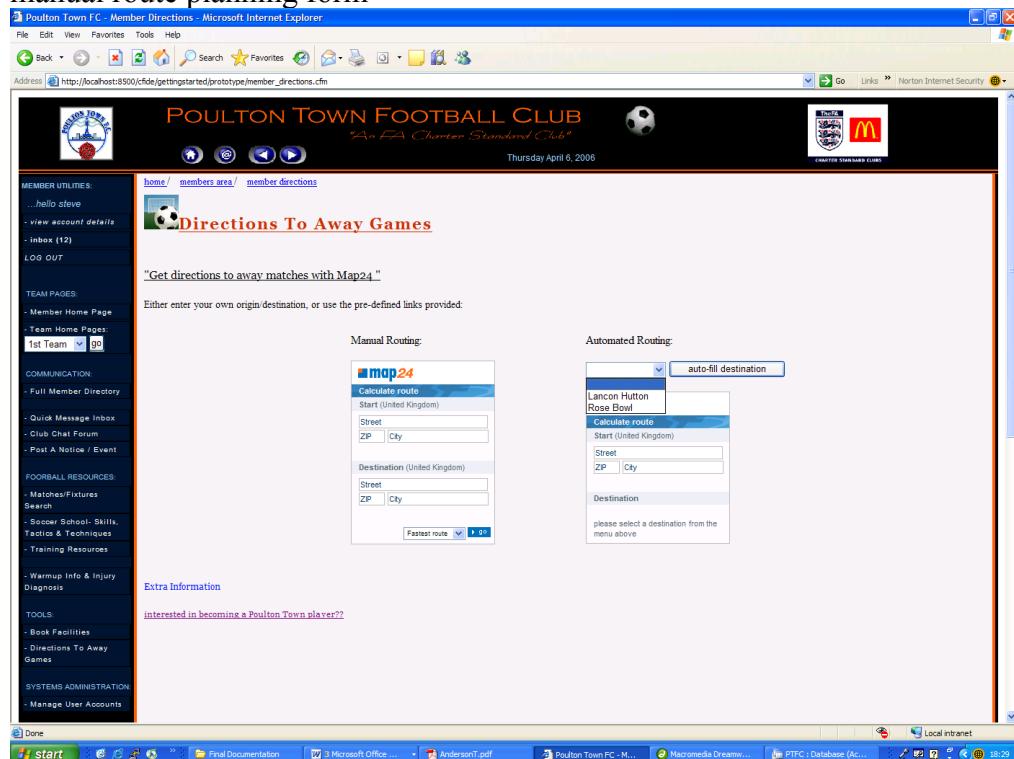
This screenshot shows a Microsoft Internet Explorer window for the Poulton Town Football Club Members Area. The address bar shows the URL: [http://localhost:8500/cfde/gettingstartedprototype/member\\_messages\\_inbox.cfm?error=1&CFTOKEN=45629044](http://localhost:8500/cfde/gettingstartedprototype/member_messages_inbox.cfm?error=1&CFTOKEN=45629044). The page title is "Poulton Town Members Internal Messaging Service". The left sidebar has a "MEMBER UTILITIES" section with links for "hello steve", "view account details", "inbox (13)", and "LOG OUT". Under "TEAM PAGES", there is a "Member Home Page" link. The main content area displays "steve's messages" and a message stating "YOUR INBOX IS FULL! - please delete some old messages!". It lists two messages from "ryan giggs (player)": one with subject "hi mate" sent on "Sunday 04 June 2006" and another with subject "hi" sent on "Sunday 04 June 2006". Both messages have "reply" and "delete" links.

## ***Appendix J –Phase 4: Online Services***

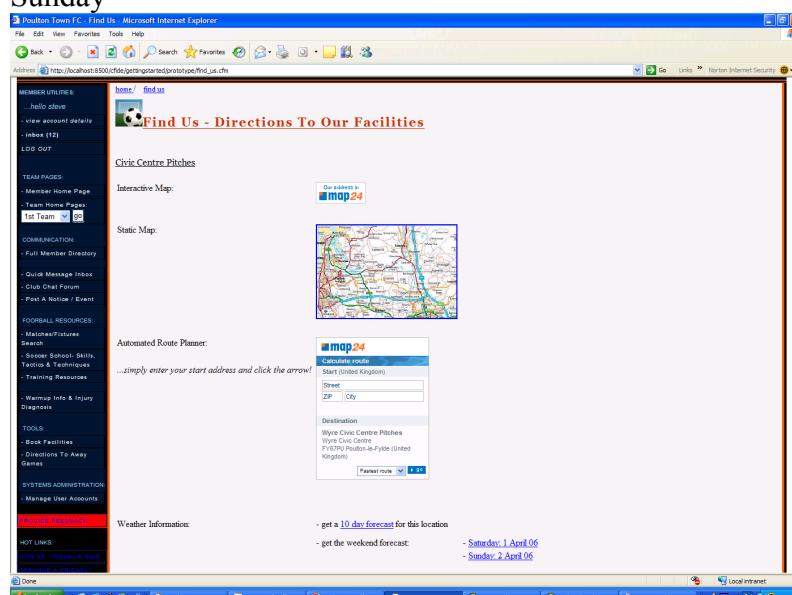
### **1. Technical Manual Exert – Explanation Of Functionality & Code**

#### **A) ROUTE PLANNING & WEATHER INFORMATION**

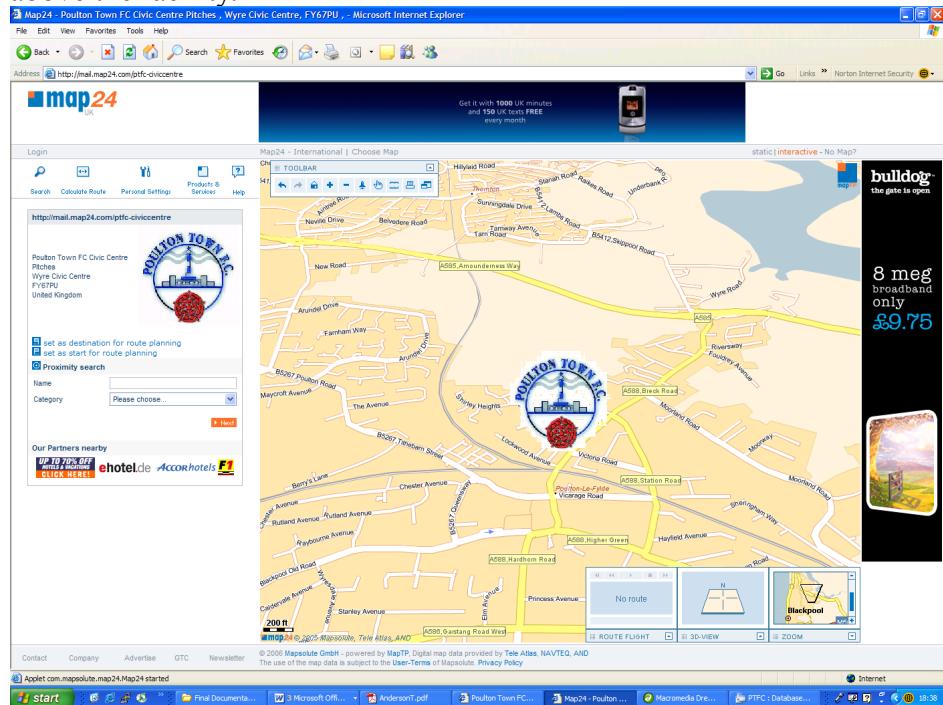
- a) the ‘directions to away games’ page provides lookup of all grounds on system, or a manual route planning form



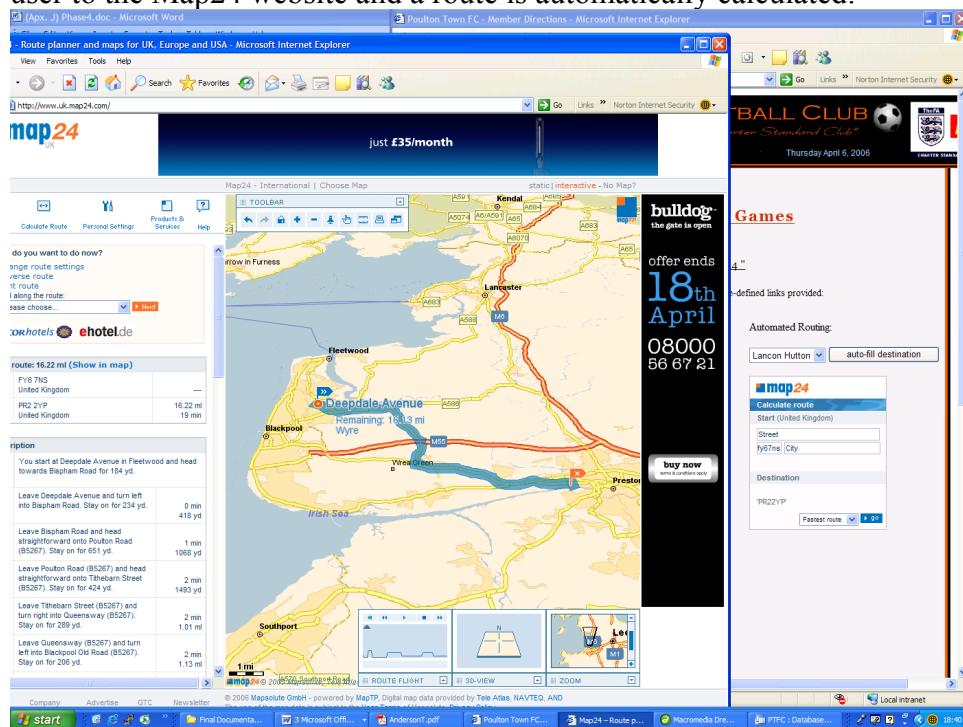
- b) the ‘find-us’ page on the public side provides oppositions with routes to PTFC facilities. Weather information is always provided as a 10 day forecast and for the next Saturday and Sunday



c) The interactive map link above opens the MailMap24 site which displays the PTFC logo above the facility.



d) selecting a route with automated information or manually entered information links the user to the Map24 website and a route is automatically calculated:



- e) match previews contain both the route-planning form (with the pre-entered destination) and links to weather forecasts for the match date.

**Match Report**

**Match id:** 1

**1st Team** 2 - 0 **Dartford Rangers**

**Referee:** alan dunn

**Date:** 29/03/2006

**Location:** Away

**Pitch:** Rose Bowl ...*directions to this ground:*

**Weather Information:** - [10 day forecast](#)

- match day weather: - [Day Before Match \(28/03/2006\) \(today\)](#)
- [Match Day \(29/03/2006\)](#)

**Meet Time:** 12:00:00

**Kick Off Time:** 15:00:00

**Kit:** away (blue)

## **B) EVENTS CALENDAR**

- a) the events calendar is located on the public part of the site. Event details for the selected date are displayed in a table below the calendar when a date is selected.

Poulton Town FC - Contact Us - Microsoft Internet Explorer

Tuesday March 28, 2006

**Poulton Town Football Club**  
An FA Charter Standard Club

**Club Events Calendar**

To view a list of all events [click here](#)

Event dates are highlighted in grey, click on the date for more details

MO	TU	WE	TH	FR	SAT	SU
01	02	03	04	05		
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

[Last Month](#) [Next Month](#)

**Event Details:**

**training** **on:** Sunday 05 March 2006 **- (added:** 01 Jan 2006)

this week at 6

- b) in order to allow the user to view all forthcoming events on one page, a hyperlink above the calendar directs the user to a separate page

Poulton Town FC - Events - Microsoft Internet Explorer

Tuesday March 28, 2006

**Poulton Town Football Club**  
An FA Charter Standard Club

**Club Events - get involved!**

**EVENTS:-**

Welcome to the BRAND NEW Poulton Town FC e-community! **- (added:** 04 Jan 2006)

please feel free to explore this site. This area displays information to the public. To access the members area please log-in by clicking the link on the left navigation bar.

---

Hello all members **- (added:** 17 Mar 2006)

welcome to the new Poulton Town e-community! Part of the club's commitment to your development! please explore the site to see what you can do!

---

Please return sign on forms by friday **- (added:** 17 Mar 2006)

we need to send them off to the league

---

Meeting to view the new website system all welcome **on:** Friday 28 April 2006 **- (added:** 15 Mar 2006)

Please feel free to attend and see the exciting new system!

## C) FACILITIES BOOKING

- a) all booking for a selected date are displayed in a table below the calendar. The edit and cancel booking options are only displayed for systems administrators or the user who made the booking.

The screenshot shows a Microsoft Internet Explorer window for 'Poulton Town FC - Facilities Booking'. The left sidebar contains a navigation menu with links like 'hello dave', 'view account details', 'inbox', 'LOG OUT', 'TEAM PAGES', 'COMMUNICATION', 'FOOTBALL RESOURCES', 'TOOLS', 'PROVIDE FEEDBACK!', 'HOT LINKS', 'JOIN US', 'ARRANGE A FRIENDLY FIXTURE', and 'Get Involved'. The main content area has a title 'Facilities Booking' and a sub-instruction 'click on a date to view bookings:'. Below this is a calendar for April 2006. Two specific dates are circled in red: April 2nd (a Saturday) and April 13th (a Sunday). Underneath the calendar, there are two booking entries:

- Booking 1:** Facility: Civic Centre -11-a-side, pitch 3. Date/Time: 02 Apr 2006 @ 6pm - 7pm. Booked for: 1st Team (by jhs2sab - 28/03/2006). Description: goalkeeper training. The 'edit booking | cancel booking' link is circled in red.
- Booking 2:** Facility: Civic Centre -11-a-side, pitch 3. Date/Time: 02 Apr 2006 @ 7pm - 8pm. Booked for: Reserves (by coach - 28/03/2006). Description: standard training session.

- b) clicking the link to book an event displays a form to collect all the required details

The screenshot shows a Microsoft Internet Explorer window for 'Poulton Town FC - Members Area - Facilities Booking'. The left sidebar is identical to the previous screenshot. The main content area has a title 'Book Facility' and a URL 'http://localhost:8500/cfde/gettingstarted/prototype/facilities\_booking.cfm?day=1&startmonth=4&startyear=2006&event\_date=02/04/2006&store\_date=04/02/2006'. It displays a 'new booking' form with fields for 'booking id:' (Event Date: 18/03/2006), 'Facility:' (Civic Centre -11-a-side, pitch 3), 'Start Time:' (empty), 'Finishing Time:' (empty), 'Booked For:' (empty), and 'Event Description:' (empty). At the bottom are 'Save Changes' and 'undo changes' buttons, and a 'Return to Bookings' link.

## **Appendix K –Testing & Into Production**

### **1. Unit/Developer Testing Report**

Darlington (2005) recommends the following specific tests which should be conducted before making a website live. These criteria were therefore considered when generating the tests:

1. test all pages thoroughly for spelling, grammar, layout & consistency of style.
2. test pages using all targeted browsers (for completeness extend this to include as many as many browsers as possible (text and graphics based) on a range of platforms (OS))
3. test all hyperlinks
4. test for correct graphic rendering in graphical browsers/text only in text based/image off
5. test all ‘programs’/ ‘scripts’ / ‘functions’ / ‘functionality’ thoroughly

Test Ref	Page	Test Detail	Outcome	Comments	Fixed?
1.	Index.cfm	Check page displays as required	Pass		
2.		Check test notices displayed correctly (only public)	Pass		
3.	Titlebar.cfm	Check home link	Pass		
4.		Check contact us link	Pass		
5.		Check forward button	Pass		
6.		Check back button	Pass		
7.		Check date is correct	Pass		
8.		Check all images displayed	Pass		
9.	Navigationbar.html	Check login button appears above	Pass		
10.		Check all links appear for selection	Pass		
11.		Check all buttons change appearance on hover	Pass		

12.		Check all links to appropriate system pages work	Fail	Link to contact us page and the PTFC e-community page don't work – wrong file names defined	yes
13.		Check links to external sites	Pass		
14.		Check google search bar appears	Pass		
15.		Check search functionality	Fail	Search of PTFC site doesn't work – not yet indexed by google	Responsibility of google, as indexing request submitted 01/04/06
16.	Join_us.cfm	Check page displays	Pass		
17.		Check breadcrumbs work	Pass		
18.	Friendly.cfm	Check page displays correctly	Pass		
19.		Check form displayed correctly.	Pass		
20.		Check clear button	Pass		
21.		Check correct submission of form and receipt of email to correct managers	Pass		
22.		Check incorrect messages (errors displayed)	Pass		
23.	Events.cfm	Check all events displayed (no notices)	Pass		
24.		Check breadcrumbs	Pass		

25.	Events_calendar.cfm	Check correct operation of calendar (forward/back months)	Pass		
26.		Check hyperlinks displayed when events scheduled.	Pass		
27.		Check clicking of hyperlink displays correct event	Pass		
28.		Check all events displayed on calendar	Pass		
29.		Check link to events.cfm	Pass		
30.		Check breadcrumbs	Pass		
31.	Sponsors.cfm	Check page displays correctly	Pass		
32.		Check breadcrumbs	Pass		
33.	Player_search.cfm	Check page displays	Pass		
34.		Check breadcrumbs	Pass		
35.		Check all teams displayed for selection and submit button	Pass		
36.		Check hyperlink	Pass		
37.		Ensure correct display of results for 3 sample searches	Pass		
38.	Staff.cfm	Check display of page	Pass		
39.		Check breadcrumbs	Pass		
40.		Check all staff members displayed	Pass		
41.	Club_history.cfm	Check display of page	Pass		
42.		Check breadcrumbs	Pass		
43.	Club_inforamtion.cfm	Check display of page	Pass		
44.		Check breadcrumbs	Pass		

45.	facilities.cfm	Check display of page	Pass		
46.		Check breadcrumbs	Pass		
47.		Check get directions link to find_us.cfm	Pass		
48.	Find_us.cfm	Check display of page	Pass		
49.		Check breadcrumbs	Pass		
50.		Check both locations displayed	Pass		
51.		Check interactive map link	Pass		
52.		Check static map thumbnail and link to full map	Fail	Map link not displayed- folder reference incorrect	
53.		Check automated route planner form displayed	Pass		
54.		Check postcode entered is correct	Pass		
55.		Check a sample route is calculated correctly.	Pass		
56.		Check weather information 10 day forecast displayed	Pass		
57.		Check Saturday and Sunday weather links always displayed	Pass		
58.		Check “today” appears when day is Saturday or Sunday and that additional weather for next weekend is displayed	Pass		
59.	League_info.cfm	Check display of page	Pass		

60.		Check breadcrumbs	Pass		
61.	Ecommunity_info.cfm	Check display of page	Pass		
62.		Check breadcrumbs	Pass		
63.	Contact_us.cfm	Check display of page	Pass		
64.		Check breadcrumbs	Pass		
65.	Further_links.cfm	Check display of page	Pass		
66.		Check breadcrumbs	Pass		
67.		Check hyperlinks work correctly	Pass		
68.	Member_home	Check button on navigation bar links to this page but displays log-in screen	Pass		
69.	Login.cfm	Check link back to home page	Pass		
70.		Check forgotten password/username link	Pass		
71.		Check login with invalid details displays error and prevents access	Pass		
72.		Check login to deactivated account displays error to contact systems admin	Pass		
73.		Check correct details displays member home page	Pass		
74.	Forgotten.cfm	Check username request with correct details is completed	Pass		
75.		Check form if fields left blank displays error	Pass		
76.		Check if incorrect details entered, request not made	Pass		

77.		Check password request with incorrect details displays not found page	Pass		
78.		Check if fields left blank error displayed	Pass		
79.		Check if correct details entered, details confirmed and security question asked	Pass		
80.		Check correct answer generates a random password and displays confirmed message and sends email	Pass		
81.		Check incurred answer rejects request	Pass		
82.	Member_home	Check display of page	Pass		
83.		Check breadcrumbs	Pass		
84.		Check messages displayed correctly	Pass		
85.		Check correct name included in hello message	Pass		
86.		Check correct unread messages number shown	Pass		
87.	Member_bar.cfm	Check name displayed correctly	Pass		
88.		Check correct number of unread messages displayed	Pass		
89.		Check all links change appearance on hover	Pass		
90.		check all links direct to correct pages	Pass		
91.		Check logout returns to	Pass		

		logout page			
92.		Check correct links set displayed for each user role	fail	Parents role has booking facilities link=remove, players don't have training resources =add	fixed
93.	Member_details_edit.cfm	Check display of page	Fail	Missing URL value	Value added on member bar link
94.		Check breadcrumbs			
95.		Check correct details loaded		Next of kin not populated =missing code	fixed
96.		Check details updated when correct password entered	Pass		
97.		Check change rejected when incorrect current password entered	Pass		
98.		Check change rejected when new passwords don't match	Fail	Details still changed	fixed
99.		Check change rejected when new password matches old	Pass		
100	.	Check error messages if fields left blank	Pass		
101		Check cancel button	Pass		
102	Team_pages.cfm	Check display of page	Pass		
103	.	Check breadcrumbs	Fail	Breadcrumb has wrong link	fixed

				attached	
104		Check correct messages displayed for each team and correct title	Pass		
105	Member_search.cfm	Check display of page	Pass		
106		Check breadcrumbs	Pass		
107		Check drop-down appears	Pass		
108		Check search using form	Pass		
109		Check extra search options displayed for staff/player searched	Pass		
110		Check correct functionality of additional search fields	Pass		
111		Check correct results displayed for 3 sample searches	Fail	Table not formatted properly when more information link included in table =incorrect colspan value	Fixed
112		Check more information link provided only for staff only	Fail	Displayed for all users =add access rights checking code	fixed
113		Check more detail link	Fail	Missing URL value = missing value defined in	fixed

				hyperlink	
114		Check send internal message link	Fail	Username not added into “to” field =not referenced correctly	fixed
115	Member_messages.cfm	Check display of page	Pass		
116		Check breadcrumbs	Pass		
117		Check all inbox messages displayed	Pass		
118		Check unread displayed in bold	Pass		
119		Check link to full message	Pass		
120		Check reply link	Pass		
121		Check delete message link	Pass		
122		Check new message link	Failed	Integer data type used instead of numeric	fixed
123		Check read message marked as read	Pass		
124	Member_messages.cfm	Check display of page	Pass		
125		Check breadcrumbs	Pass		
126		Check reply link	Failed	Page not found =wrong link	fixed

				defined	
127		Check inbox link	Pass		
128	Chat_forum_home.cfm	Check display of page	Pass		
129		Check breadcrumbs	Pass		
130		Check all rooms displayed	Pass		
131		Check new room displayed	Pass		
132		Check new room and delete only available to systems admin	Pass		
133		Check delete deletes all discussions and threads	Failed	Threads missed =incorrect lookup code	fixed
134		Check topics and posts information correct	Failed	Posts not calculated correctly- incorrect lookup for counting	fixed
135		Check link to room	Pass		
136	Chat_forum_discussions.cfm	Check display of page	Pass		
137		Check breadcrumbs	Pass		
138		Check correct discussions displayed	Pass		

139		Check posts and last post information correct	Pass		
140		Check new discussion available and works	Pass		
141		Check delete only available to systems admin	Pass		
142		Check delete deletes all threads	Pass		
143		Check link to thread	Pass		
144	Chat_forum_threads.cfm	Check display of page	Failed	Table miss formatted – incorrect code	fixed
145		Check breadcrumbs	Failed	Threads missing	fixed
146		Check all threads displayed	Pass		
147		Check links	Pass		
148		Check new thread link	Pass		
149		Check delete only available to systems admin and works	Pass		
150		Check new posts added correctly	Pass		
151	Notices_admin.cfm	Check display of page	Pass		
152		Check breadcrumbs	Pass		
153		Check all notices displayed	Pass		

154		Check new notices /event link	Pass		
155		Check edit/delete always available to systems admin	Pass		
156		Check edit/delete available to users who created the notice	Failed	Available to all = code not implemented	Fixed –code added
157	Notice_edit.cfm	Check edit loads details correctly	Failed	Event drop-down doesn't populate correctly = missing code	fixed
158		Check edit updates details	Pass		
159		Check cancel doesn't save changes	Pass		
160		Check undo	Pass		
161		Check new notice is added and displayed correctly in system	Pass		
162		Check validation on form fields	Failed	Title can be not entered=missing code	fixed
163	Match_search.cfm	Check display of page	Pass		
164		Check breadcrumbs	Pass		
165		Check links display correct search forms	Pass		

166		Check search forms and correct results displayed	Pass		
167		Check more detail links displayed	Pass		
168		Check preview displayed as preview	Failed	Team rating value displayed	Fixed-code removed from section
169		Check match report displays all information	Pass		
170		Check manager notes hidden in standard report	Pass		
171		Check weather displayed when match in future and less than a week away	Failed	Displayed when match is in past	Fixed- Extra cfif function added
172		Check directions displayed for away fixtures only	Failed	Displayed in all reports	Fixed –extra cfif added
173		Check edit report link works	Pass		
174	Match_edit.cfm	Check oppositions drop-down menu correctly populated	Failed	Only single value visible-incorrect query	fixed
175		Check all data re-populated correctly	Failed	Referee value not loaded into drop-down-missing query	fixed
176		Check update button re-loads locations correctly (home/away)	Pass		
177		Check delete works	Pass		
178		Check saving changes works	Pass		

179		Check link to edit player stats	Pass		
180	Player_edit.cfm	Check display of page	Pass		
181		Check breadcrumbs	Failed	Missing	fixed
182		Check correct population of table	Failed	One substitute value missing -loop 1 cycle too short	fixed
183		Check player details saved	Pass		
184		Check cancel doesn't save	Pass		
185		Check details loaded correctly into edit fields	Pass		
186		Check selecting a player who is already playing displays an error	Failed	function not completed but error message not shown-undefined error message, so added	fixed
187		Check return to march link	Failed	Returns to search not to match report-incorrect link	Fixed-link changed
188	Match_new.cfm	Check display of page	Failed	Page not displayed-integer value type not numeric	fixed
189		Check breadcrumbs	Pass		

190		Check correct oppositions displayed for selection	Pass		
191		Check correct locations displayed	Pass		
192		Repeat checks for edit	Failed	Update button missing next to location	fixed
193	Tactics_search.cfm	Check display of page	Pass		
194		Check breadcrumbs	Pass		
195		Check search form works	Pass		
196		Check correct results for 3 sample searches	Pass		
197		Check functionality of recent searches	Pass		
198		Check create new tactic link only for those with access rights	Pass		
199		Check column headings sort correctly	Pass		
200		Check more detail link	Failed	Page not displayed because newest page not uploaded onto server after changes	Fixed (uploaded)
201		Check edit link	Pass		

202		Check edit details saved correctly	Pass		
203		Check return link	Pass		
204		Check delete link	Pass		
205		Check correct population of fields	Pass		
206	Training_plan_search.cfm	Check display of page	Pass		
207		Check breadcrumbs	Pass		
208		Check search form works	Pass		
209		Check correct results for 3 sample searches	Pass		
210		Check functionality of recent searches	Pass		
211		Check create new tactic link only for those with access rights	Pass		
212		Check column headings sort correctly	Failed	Not re-sorted =missing code	fixed
213		Check more detail link	Pass		
214		Check edit link	Pass		
215		Check edit details saved correctly	Pass		
216		Check return link	Pass		

217		Check delete link	Pass		
218		Check correct population of fields	Pass		
219	Injury_search.cfm	Check display of page	Pass		
220		Check breadcrumbs	Pass		
221		Check display of advice type dropdown menu	Failed	Blank option available instead of stating "select"	fixed
222		check correct display of appropriate advice type search depending on menu selection	Pass		
223	-injuries	Check display of body image	Pass		
224		Check correct functionality of clicking on different body areas	Failed	Clicking foot loads arm – incorrect code	fixed
225		Check reset link	Pass		
226		Check create new link defined for those with rights	Pass		
227		Check search displays correct results for 3 sample searches	Pass		
228		Check further information link	Pass		
229		Check edit link displayed to those with correct access	Pass		

230	-stretches	Check display of body image	Pass		
231		Check correct functionality of clicking on different body areas	Pass		
232		Check reset link	Pass		
233		Check create new link defined for those with rights	Pass		
234		Check search displays correct results for 3 sample searches	Pass		
235		Check further information link	Pass		
236		Check edit link displayed to those with correct access	Pass		
237	Injury_detail.cfm	Check display of page	Pass		
238		Check breadcrumbs	Pass		
239		Check correct details displayed	Pass		
240	Injury_edit.cfm	Check blank form loaded if 'new'	Failed	Data fields are populated – incorrect lookup code used	fixed
241		Check all data loaded correctly in edit	Pass		
242		Check save and cancel	Pass		
243		Check delete	Pass		

244	stretches_detail.cfm	Check display of page	Pass		
245		Check breadcrumbs	Pass		
246		Check correct details displayed	Pass		
247	stretches_edit.cfm	Check blank form loaded if 'new'	Pass		
248		Check all data loaded correctly in edit	Pass		
249		Check save and cancel	Pass		
250		Check delete	Failed	Correct direction to page but record is not removed – missing line of code	fixed
251	Facilities_booking.cfm	Check correct operation of calendar (forward/back months)	Pass		
252		Check hyperlinks displayed when booking scheduled.	Pass		
253		Check clicking of hyperlink displays correct booking	Pass		
254		Check all bookings displayed on calendar	Pass		
255		Check breadcrumbs	Pass		
256		Check make new booking	Pass		

		option is available			
257		Check edit and cancel booking available to systems admin	Pass		
258		Check multiple bookings on one date sorted so first created record appears at top	Failed	Appears at bottom – wrong ordering defined in query	
259	Booking_edit.cfm	Check blank form loaded for new booking	Pass		
260		Check correct information populated for edit booking	Pass		
261		Check date entered correctly	Pass		
262		Check save works properly	Failed	Date saved wrong –wrong format because db uses mm/dd/yyyy and system uses dd/mm/yy	Fixed –extra URL variable created to hold date as it is stored in db
263		Check all booking appear on data in calendar	Pass		
264		Check validation on data input	Pass		
265	Member_directions.cfm	Check page displays	Pass		
266		Check breadcrumbs	Pass		
267		Check manual routing form is displayed	Pass		

268		Check manual routing form works correctly	Pass		
269		Check automated routing form displayed	Pass		
270		Check away grounds all appear for selection in drop-down	Pass		
271		Check auto-fill button loads destination into form	Pass		
272		Check route calculated is correct	Pass		
273	Admin_reset_password_search.cfm	Check page displays	Pass		
274		Check breadcrumbs	Pass		
275		Check search facility works correctly	Pass		
276		Check results displayed for 3 sample searches	Pass		
277		Check change account details link	Pass		
278		Check create new user link	Failed	Link missing	Fixed -added
279	Admin_reset_password.cfm	Check correct details populated	Failed	User type not loaded into menu	
280		Check details updated when correct password entered	Failed	System cant cope with username changes-error in implementation	fixed

				n	
281		Check change rejected when new passwords don't match	Pass		
282		Check change rejected when new password matches old	Failed	System allows change-missing code	fixed
283		Check error messages if fields left blank	Pass		
284		Check cancel button	Pass		
285		Check blank form if new user selected	Pass		
286		Check user created correctly	Pass		
287	N/A –General security checks	Try to access restricted page directly without logging in and ensure login displayed	Pass		
288		Try to access page which have no rights to access (when logged in) and ensure linked back to member home	failed	Can access book facilities as a player =missing access rights checking code	fixed
289		Check if a bookmark is used (when not logged in) if login page is displayed	Pass		
290		Check appropriate member bard for each user type	Pass		
291		Check cant go 'back' after logging out	Pass		
292		Check cant access private folders above root on web	Pass		

		server			
293	N/A – General usability/functionality checks	Check saving a bookmark and linking to the system via it loads the correct page	Pass		
294		check system on Netscape explorer browser	Pass	Acceptable differences in appearance when browsing site	
295		check system on Opera browser	Pass	Acceptable differences in appearance when browsing site	
296		check system on Linux OS	Pass	Acceptable differences in appearance when browsing site	
297		Test standard error message by generating an intentional failure	Pass		

## 2. User Acceptance Testing Report

<b>From:</b>	"chris davies" <info@j4gsoccerschool.fsnet.co.uk>	 <a href="#">Add to Address Book</a>	 <a href="#">Add Mobile Alert</a>
<b>To:</b>	"stephen brown" <sabro1000@yahoo.com>		
<b>Subject:</b>	 PTFC website report from project team		
<b>Date:</b>	Mon, 04 Apr 2006 11:51:02 +0100		

Steve,

Prioritised list of changes suggested by members. There doesn't appear to be very much as most people were extremely pleased with what you have done already. We will know more once it is unveiled to all members obviously. One or two things which are likely to involve heavy development (training plans) I have left out of this report because I think those should be scheduled for larger projects at another time. I know you have a lot to be doing at the moment as it is and in any case they will give us something to work on ourselves and get us used to working with the site.

If you would be able to make the following minor changes then we will formally accept the system and begin populating most of the public site and the information system, although that is likely to be next month because we are all quite busy at the moment. Cheers!

1. Google search doesn't work for PTFC site
2. Make the Poulton Town FC banner at the top of every page a bit bigger
3. Add a couple more security questions for members to use if they want to reset their password
4. Parents apparently have the ability to use the injury diagnosis tool. Can we remove this from their menu
5. Put the two forms for directions in the members area next to each other rather than one on top of the other
6. Intensity for training plans should be 1-5 rather than 1-10
7. Add 'skill' as an area of focus for training plans
8. Cancel link in chat forum new room links to wrong page
9. Thumbnail map doesn't load on public facilities page
10. Spelling mistake in facilities booking page main title
11. Events table looks cramped can we space it out a bit more. Also can we sort events into the opposite order so they appear with the latest messages at the top
12. Add a link to search for match reports by kit so we can assess which colours the team play better in over the season

The system is fine once you have done those.

### 3. Into Production

The Domain Name “poultontown.co.uk” was purchased and linked to the site:

This screenshot shows the 'HOST-IT.co.uk HOSTING CONTROLLER' interface. The main window displays the website for 'POULTON TOWN FOOTBALL CLUB An FA Charter Standard Club'. The sidebar on the left contains links for MEMBER UTILITIES (LOG IN, PROVIDE FEEDBACK), HOT LINKS (JOIN US, PLAYERS & STAFF, ARRANGE A FRIENDLY FIXTURE, GET INVOLVED), and ADMIN PANELS (MS SQL Admin, MySQL Admin, DeepMatrix Webstats, Spam Control, Terms & Conditions). The right panel is titled 'Domain Menu' for 'poultontown.co.uk'. It shows the 'Hosting Package: My New Package' with URL 'http://www.poultontown.co.uk/' and a 'Temporary URL' link. It also lists 'Name Server Records' with IP addresses 194.150.252.51 and 194.150.252.53. Below this are various management icons: Email Accounts (POP3), Email Forwarding, FTP Accounts, Virtual Directories, Domain Aliases, Sub Domains, ODBC DSNs, Database Manager, FrontPage Extensions, Web Site Settings, Statistics, and Advanced Domain Options.

E-mail forwarding was set up to create “@poultontown.co.uk” email addresses for staff

This screenshot shows the 'Email Forwards' section for the domain 'poultontown.co.uk'. The sidebar includes links for ADMIN PANELS (MS SQL Admin, MySQL Admin, DeepMatrix Webstats, Spam Control, Terms & Conditions). The main content area lists several email forward rules:

Email Address	Forwarding To
admin@poultontown.co.uk	*Catch All* → ptfcsystemadmin@hotmail.com
alan_murray@poultontown.co.uk	harshbutohsofair@yahoo.co.uk
chrisd@poultontown.co.uk	davis_23@hotmail.com
paul_newman@poultontown.co.uk	pnlazyboy@hotmail.com
steve@poultontown.co.uk	sabro1000@yahoo.com

At the bottom, it shows '5 Used' and '95 Available'.

## The database was uploaded for use on the site along with all pages

Screenshot of Macromedia Dreamweaver showing the file structure of the website and a list of local files.

**File Structure:**

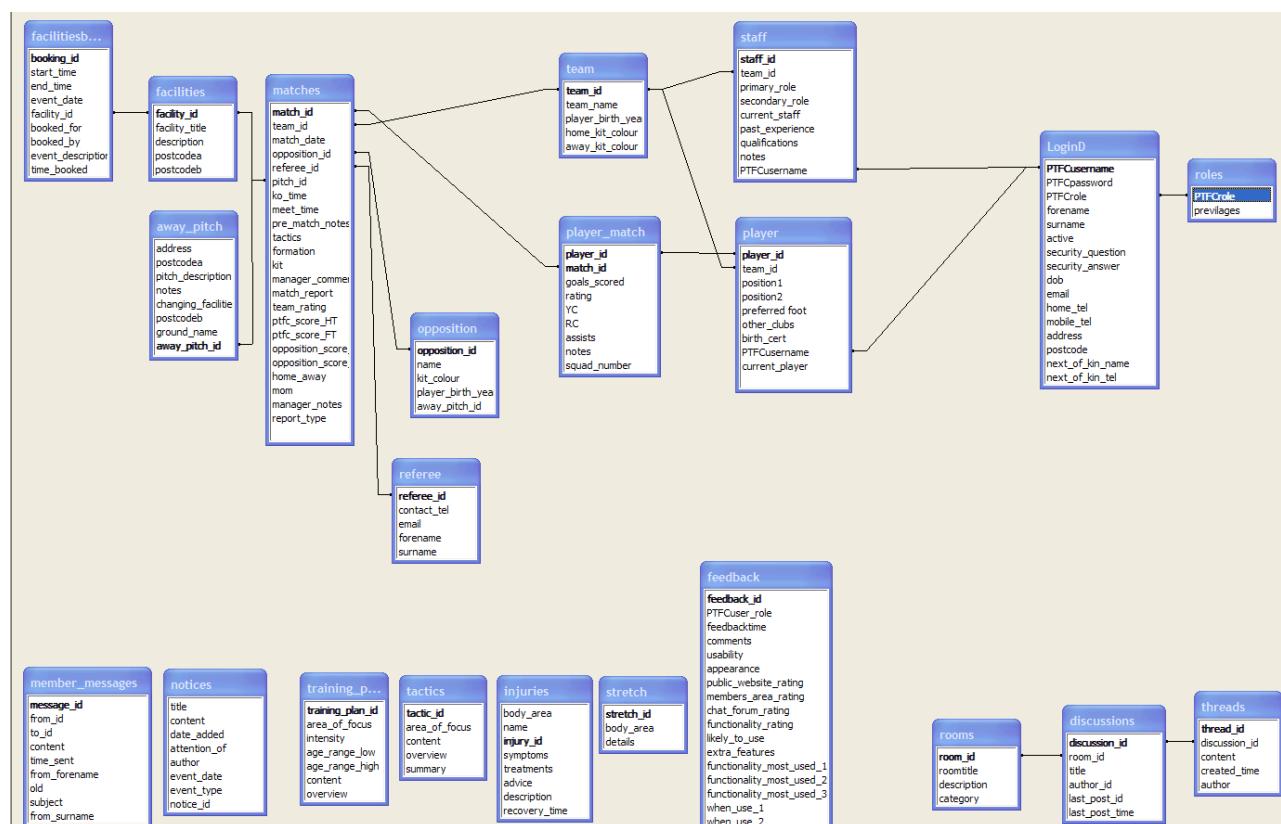
- wwwroot/
  - cg-bin
  - databases
  - dt
  - site\_images
  - admin\_member\_details\_update.cfm
  - admin\_reset\_passwords.cfm
  - admin\_reset\_passwords\_search.cfm
  - Application.cfm
  - booking\_calendar.cfm
  - booking\_delete.cfm
  - booking\_edit.cfm
  - booking\_update.cfm
  - calendar.cfm
  - cf\_upload.cfm
  - chat\_forum\_discussions.cfm
  - chat\_forum\_home.cfm
  - chat\_forum\_threads.cfm
  - club\_history.cfm
  - club\_info.cfm
  - contact\_us.cfm
  - create\_discussion.cfm
  - create\_poon.cfm
  - create\_thread.cfm
  - discussion\_delete.cfm
  - document\_store.cfm
  - community\_info.cfm
  - events.cfm
  - eventscalendar.cfm
  - facilities.cfm
  - feeling\_booking.cfm
  - feedback.cfm
  - feedback\_update.cfm
  - find\_us.cfm
  - fixture.cfm
  - ForcusedLogin.cfm
  - forgotten.cfm
  - friendly.cfm
  - inc\_calendar.cfm
  - index.cfm
  - injury\_delete.cfm
  - injury\_delete\_confirm.cfm
  - injury\_detail.cfm
  - injury\_edit.cfm
  - injury\_search.cfm
  - injury\_update.cfm
  - join\_us.cfm
  - league\_info.cfm
  - links.cfm
  - log\_in\_page.cfm
  - logged\_out.cfm
  - login\_navigation.html

**Local Files:**

Name	Type	Modified
site - Poulton To...	Folder	07/04/2006 10:49
cfn_replaced	Folder	17/02/2006 10:06
old_databases	Folder	07/04/2006 14:53
old_db	Folder	04/04/2006 14:25
New Folder	Folder	19/02/2006 21:22
old_pages	Folder	15/03/2006 18:08
remote	Folder	16/02/2006 10:12
searching tries	Folder	22/02/2006 14:01
site_images	Folder	04/04/2006 11:01
Templates	Folder	12/02/2006 15:35
test	Folder	11/02/2006 16:42
tester	Folder	19/02/2006 21:22
wwwroot	Folder	04/04/2006 10:44
_holding.htm	1KB HTML Document	02/04/2006 14:03
admin_member...	2KB Macromedia...	16/03/2006 00:26
admin_reset...	7KB Macromedia...	28/03/2006 21:11
admin_reset...	7KB Macromedia...	04/04/2006 09:23
Application.cfm	1KB Macromedia...	19/02/2006 20:03
booking_cale...	9KB Macromedia...	01/04/2006 11:24
booking_dele...	1KB Macromedia...	01/04/2006 11:27
booking_edit...	8KB Macromedia...	04/04/2006 09:23
booking_upda...	1KB Macromedia...	01/04/2006 11:27
calendar.cfm	5KB Macromedia...	28/03/2006 20:45
cf_upload.cfm	1KB Macromedia...	23/02/2006 14:07
chat_forum_...	6KB Macromedia...	04/04/2006 09:23
chat_forum_...	10KB Macromedia...	05/04/2006 15:20
chat_forum_...	5KB Macromedia...	04/04/2006 09:23
chat_history...	7KB Macromedia...	04/04/2006 09:23
club_info.cfm	3KB Macromedia...	04/04/2006 09:23
contact_us.cfm	5KB Macromedia...	04/04/2006 11:04
create_discus...	1KB Macromedia...	14/03/2006 20:52
create_roum...	1KB Macromedia...	14/03/2006 20:41
create_threa...	1KB Macromedia...	14/03/2006 23:18
discussion_d...	1KB Macromedia...	14/03/2006 22:15
document_st...	5KB Macromedia...	23/02/2006 17:06
events.cfm	5KB Macromedia...	04/04/2006 09:23
eventscalendar...	4KB Macromedia...	04/04/2006 09:23
facilities.cfm	6KB Macromedia...	04/04/2006 09:23
facilities_boo...	6KB Macromedia...	04/04/2006 09:23
feedback.cfm	12KB Macromedia...	04/04/2006 09:23
feedback_upd...	1KB Macromedia...	06/03/2006 12:26
find_us.cfm	16KB Macromedia...	28/03/2006 18:45
fixture.cfm	13KB Macromedia...	04/04/2006 09:23
ForceUserLo...	2KB Macromedia...	05/04/2006 12:33
forgotten.cfm	6KB Macromedia...	04/04/2006 09:23
friendly.cfm	8KB Macromedia...	04/04/2006 09:23
inc_calendar...	4KB Macromedia...	05/03/2006 19:48
index.cfm	4KB Macromedia...	01/04/2006 10:54
injury_delete...	1KB Macromedia...	17/03/2006 17:42
injury_delete...	4KB Macromedia...	04/04/2006 09:23
injury_detail...	5KB Macromedia...	04/04/2006 09:23
injury_edit.cfm	7KB Macromedia...	04/04/2006 09:23

Title: Poulton Town FC - Members Area - Tactics Resource - Add/Edit/Delete Date: 23/02/2006 17:06 Size: 9KB

## Database Implementation:



## Appendix L –Evaluation

## **1. Assessor Demonstration Meeting Summary Document**

## **PHASE 1 = Website & Database**

*Website to display club information*

-COMPLETE (population of data to be done by PTFC)

*Secured members area – usernames + passwords*

-COMPLETE (role based security also implemented which represents an extension to the minimum requirements)

*Display secure club information, inc team pages eg. notices*

-COMPLETE (secure members area created, individual team pages created and notices functionality provided –system reflects structure of site-map created during design)

*- fixtures/match information*

- member details COMPLETE

- tactics/training/injuries knowledge

with requirements for stored information and corresponding

(all databases created in line with requirements for stored information and corresponding to design. Databases all supported by appropriate data input/edit/functionality as required)

## **Additional Phase 1 Emergent Requirements:**

-Auto-password reset & username request functionality implemented  
COMPLETE (in addition to the reset-passwords facility)

*COMPLETE* (in addition to the reset passwords facility available to the systems administrator, users can reset their own password and request the administrator remind them of their username.)

## *-Personal Account Details Page*

**COMPLETE** (users also provided with a screen that allows them to modify their own account details on the system. This combined with the auto-reset functionality should reduce the workload on the systems administrator considerably)

-Graphical Input for injuries and extra “stretches” advice

-COMPLETE (clickable image of body implemented for data input and stretches database created)

-Domain Name purchase and club email addresses (email forwarding)

*COMPLETE* ([www.poultontown.co.uk](http://www.poultontown.co.uk)) purchased and linked to the system..

Forwarding for email to existing account inboxes was also set up to provide

[@poulton.co.uk](mailto:@poulton.co.uk) email addresses for staff. System inboxes

#### PHASE 2 - E. G. - M. G. - E.

### **PHASE 2 = E-Community:**

-COMPLETE (chat forum facility manually coded and integrated into the system & linked to the main site via RTECG)

PHASE 3 – E-Community Member Directory & Communication

*Identify and contact key club members.*

- **COMPLETED** (member directory allows searching by member type/role and displays qualifications etc. with automated link into quick messaging for internal communication)

## **Qualifications**

- **COMPLETED** (full searchable member directory created which displays appropriate information like name, address, file)

## **Additional Phase 2 Emergent Requirements:**

### *- “Quick Messages”*

-COMPLETE (an emergent requirement was to allow provision of a quick messaging system that allowed members to send private one-to-one messages to each other. The club still highlighted their desire not to include a real-time chat facility (because it would detract from use of the forum), but decided that rather than utilise the intended ‘form to email’ functionality provided elsewhere on the system, they would prefer an internal messaging service)

## **PHASE 4 = Online Services**

### *Online services*

#### *- get directions to games*

-COMPLETE (auto-buttons created in both the public and members areas to provide routing information to/from appropriate locations)

#### *- get match/training weather information*

-COMPLETE (auto-buttons created in both the public and members areas to provide appropriate weather information for fixtures and training).

#### *- allocate/book facilities*

-ATTEMPTED (while a complex booking facility was not possible given the time available, the system does allow club staff to log on a calendar when they intend to be using certain facilities. Validation does not exist to prevent double-bookings etc, but at least now the club have a way of formally logging facility usage. Surrounding that with appropriate business rules eg. “facility bookings must be made on the PTFC e-community. Where double-bookings occur, those who have booked (first) on the system shall have priority”)

### *Events Calendar*

-COMPLETE (code used to develop the booking system was able to be easily adapted to display notices in calendar format. Because the club value this functionality as being important in increasing event attendance, they authorised its inclusion, despite its priority 3 status)

## **NOT IMPLEMENTED:**

### *Online Services:*

#### *- pledge donations*

-NOT IMPLEMENTED (the club decided that of the online services this was the lowest priority because they would prefer not to have the complication of handling payments online ie. fears of security etc. Infrequent usage was also anticipated)

#### *- order merchandise*

-NOT IMPLEMENTED (similar to above, the club wished not to handle online payments. Furthermore, the relatively low amount of merchandise available also caused this to be a low priority)

#### *- voting*

-NOT IMPLEMENTED (this was given a low priority because it was a largely aesthetic feature. Its use for player of the season awards was not able to justify its inclusion, with managers also preferring to conduct that manually to ensure a fair voting)

#### *- indicate if available for game*

-NOT IMPLEMENTED (it was decided that unless this facility was made compulsory usage, it would provide little benefit).

### *Club Administration Facilities*

-NOT IMPLEMENTED (lack of resources meant this was not possible to implement. The club were however not concerned since current MS Office facilities are adequate and administration was not a key focus of the system’s strategy. Email also offers the ability to submit expense reports and may represent future system enhancement).

## **2. Extract From Systems Administration Manual**

The following section is extracted from the documentation provided to PTFC in the form of a systems administration manual, to assist future development. It is also supplemented by summaries of chapters 1-4 and appendices G-J

### **ACCOUNT DETAILS**

-The hosting company currently displaying the system are:

Host-it.co.uk (<http://www.host-it.co.uk/>)

-The current package is:

CFMX Bronze:

[http://www.host-it.co.uk/hosting/panel\\_plans/plans/coldfusion\\_hosting.asp](http://www.host-it.co.uk/hosting/panel_plans/plans/coldfusion_hosting.asp) )

-The control panel for the system can be found at:

<https://secure3.host-it.co.uk/>

Account Details: Username: \*\*\*\*\*

Password: \*\*\*\*\*

-The URL domain name: [www.poultontown.co.uk](http://www.poultontown.co.uk) was purchased from [www.telivo.com](http://www.telivo.com)

Account Details: Username: \*\*\*\*\*

Password: \*\*\*\*\*

....and must be renewed every 2 years (first renewal May 2007)

### **FUTURE DEVELOPMENT**

#### **TOOLS**

Tools such as Microsoft Frontpage/Dreamweaver can be used to assist with HTML/Coldfusion coding when developing the system further. HTML and Coldfusion can however be edited in basic text editors if such tools are not available.

#### **DATABASES**

Coldfusion is able to support multiple database types simultaneously, meaning additional databases can be created in any language. Most notably, user-friendly tools such as Microsoft Access can be added alongside the current MS SQL database (provided they are purchased from Host-it). Please however note the research section accompanying the system project report to identify the problems with MS Access and multiple simultaneous users.

#### **UNDERSTANDING THE CURRENT SYSTEM**

A conscious effort has been made during coding to include comments to explaining complex code

(allowing quicker understanding by the future developer). Note however that HTML and Coldfusion are extremely well-documented languages and it is recommended that the references section is consulted to seek appropriate education prior to embarking upon development.

### TEMPLATES

The standard page template is stored in the “templates” folder on the web server. Pages from the system can be downloaded using the ‘FTP’ link provided on the host-it administration panel (where instructions and tutorials exist outlining how the website content can be updated/modified).

### MENU BARS

The approach taken during development mean “server side includes” are used to include navigation bars and menus on each page. This means they don’t have to be re-coded on each page, while changes made to them are automatically replicated throughout the site. The file names are:

Titlebar.cfm = horizontal bar at top of each page

Navigationbar.cfm = standard “public website” menu bar found on left of each page

Memberbar.cfm = members menu bar displayed after login

\*note the presence of <cfif> functions to control display of content of these pages so menu items are only displayed to the appropriate users.

### PROPOSED ENHANCEMENTS - WAP ACCESS

The XHTML standard used supports future development into mobile phone delivery. Host-it also support this functionality, however pages will need to be re-coded into WML standard. Once again commercial documentation should be consulted before implementation.

### 3. PTFC Committee Feedback Letter

POULTON TOWN F.C.  
*Your local Charter Standard Club*



3, Poplar Avenue  
Poulton-le-Fylde  
Lancashire  
FY6 8JD

Tel: 01253 884929  
Mob: 07843 344696

18<sup>th</sup> April 2006



Dear Stephen,

#### **Poulton Town F.C. E-Community**

A number of Club members have now had the opportunity to review the PTFC e-community system, its features and controls which you have kindly been developing.

The feedback I have received, together with my own review of the system, has been very positive. We have been particularly pleased with the following features which will help to create knowledge and improve information communication both within the Club and with external parties:

- Secure members area with log in / password control
- Members chart rooms – I see this being very popular with the younger players
- Team and club notices
- Player and team information
- Knowledge resource areas – especially the training and injury areas
- Public Website – essential for improving the Club's profile

As a result of our review, I can confirm that the e-Community fully meets the requirements we discussed last year, i.e. "a system to log, utilise and distribute information regarding Poulton Town Football Club activities".

On behalf of the entire Club I would like to thank you for your hard work in developing this service and I wish you every success in your studies and future career. Please keep us informed of your progress as we are always interested in our "old boys" and I'd be delighted to see you at any of our team's games or the Annual Presentation Day – this year on 21<sup>st</sup> May 2006 at the Hilton Hotel, Blackpool.

Once again, thank you and good luck.

Yours sincerely

Steve D'Arcy,  
PTFC Youth Section Chairman

*Football for All – Football for Life*

## **4. Addressing The Principles Of Change Management**

### **1. Address the ‘human side’ systematically**

This was achieved by spending considerable time at the outset, assessing and planning for the impacts of the new system. A project team was constructed to lead the project and throughout they ensured communication and involvement of other stakeholders. A thorough organisational analysis phase also ensured identification and consideration of associated human issues.

### **2. Start at the top**

The plan for the system was presented to the committee immediately. A project team was then assembled and a vision defined before revealing the project to any other club members. Consequently the committee and project team were thoroughly educated and had a clear aligned direction/support for the project.

### **3. Involve Every Layer**

Throughout the project there were conscious efforts made to involve representatives of all stakeholders, from the committee, to managers, to players. This was facilitated via the numerous project meetings, documented in appendix B.

### **4. Make the case formal**

The club wrote proposals for the system into their annual strategy, while also preparing a formal document to outline the proposal to members. Resistance to change was found to be minimal, but this still helped formalise what was being attempted.

### **5. Create Ownership**

The project team was assembled with people who genuinely believed in the project and had the ability/resources to see its successful implementation. They were involved in defining requirements and solving the problems throughout. Prototype reviews gave them the opportunity to highlight additional problems/solutions during implementation.

### **6. Communicate The Message**

Throughout the project I attempted to ensure semi-continuous communication with the project team so as to sustain their involvement and commitment. They indeed did the same with their club members. At regular intervals meetings with other key stakeholders were arranged to demonstrate the progress of the project and articulate the vision by reinforcing potential advantages of such a system.

### **7. Address the cultural landscape**

Prior to beginning the project consideration of the organisation was considered. The day of observation and interaction I conducted with the club enabled accurate overview of the culture in which the system would operate, as did analysis of documentation. This work was compounded in the organisational analysis phase.

### **8. Address Culture explicitly**

The culture of the club was generally identified as being appropriate to support the new practices.

There existed a definite atmosphere of commitment and drive towards achievement through sharing knowledge and helping each other develop. This key message was reinforced by the club during project development so that by the time the system was ready to be introduced, it was ready to be embraced as an effective tool. This ensured the structure and desire for change was sustained until deployment, supporting the transition.

### **9. Prepare for the unexpected**

Having a dedicated project team as part of the club assisted continual alignment of the project with the needs of the club. Their “every-day” involvement allowed them to accurately identify and relay changing requirements as well as monitor the club’s internal and external environment. By forming a project team, it was also possible to isolate project responsibility from any one individual, so even if they left, the project could continue. This was indeed the case when one member of the project team had to resign from the team because of personal commitments. In order to reduce the dependence on my own presence (should it be removed for any reason), I agreed to periodically provide PTFC with copies of whatever I had produced.

### **10. Speak to the individual**

Throughout the project I aimed to communicate effectively with the project team to inform them of what was required and what was being implemented/ how this would deliver the desired benefits. This was extended to other stakeholders in the meetings they were invited to, making them feel a part of the project.

## 5. End-User Feedback

Letter sent out by the PTFC Project Team to selected members requesting feedback:

**From:** [chris davies](#)

**To:** [Stephen Butler](#) ; ['Steve Winter'](#) ; [Steve Drummond](#) ; [steve forrest](#) ; [Steve D'Arcy](#) ; [david catterall](#) ; [Martin Day](#)

**Sent:** Sunday, April 09, 2006 7:24 PM

**Subject:** PTFC Website

Gents,

As you may well be aware, Stephen Brown (one of our ex-players) has been creating a website for the club as part of his degree course at Uni. Myself, Steve D & Steve F met with Stephen and gave him a brief remit of some of the things we would require. He has finished the preliminary stages of the site and now needs some feedback from us as to the usability and content of the site. The site will have public and private password protected areas, where club information/ training programs/ match stats etc etc can be passed around.

[www.poultontown.co.uk](http://www.poultontown.co.uk)

Can you please take a look at the site and try out different areas and make any notes of changes you think will help make the site more usable for the club. You are also able to update your personal information when logged in.

The user name & password to access the private areas is your initial and surname ie. (username) cdavies (password) ptfc.

Thanks for your help in this.

Chris

### Examples Of Feedback Obtained:

**From:** "Steve Butler" <stevebutler1@btinternet.com>  
**To:** "chris davies" <info@j4gsoccerschool.fsnet.co.uk>  
**Subject:** Re: PTFC Website  
**Date:** Mon, 10 Apr 2006 15:42:39 +0100

Had a look this afternoon and whilst I don't profess to be an expert, it seems to cover all the things required and is very user friendly. It appears very professional and I think we could use it in numerous ways to raise the profile of the club in the community. I would be extremely interested in developing the sponsors page as i think we could get some good funding through this. Maybe even linking to other sites or showing adverts? The only wonder is how easy it will be to update/maintain the player info/stats and how often will these fall out of date? Are these updated automatically via the reports because this would help a lot?

Steve

**From:** "Steve D" <sd001a9354@blueyonder.co.uk>  
**To:** "chris davies" <info@j4gsoccerschool.fsnet.co.uk>  
**Subject:** Re: PTFC Website  
**Date:** Sun, 9 Apr 2006 20:40:44 +0100

Chris

I like this - one extra feature if possible is a direction link to the grounds where we have to play (I.e. through multimap or RAC etc). Looks good and very professional. If parents agree to it, player profiles (supplied by managers) would be good for the lads, and obviously up-to-date match reports

Steve D

**From:** "David" <sdj@yahoo.co.uk>  
**To:** "chris davies" <info@j4gsoccerschool.fsnet.co.uk>  
**Subject:** Re: PTFC Website  
**Date:** Sun, 11 Apr 2006 12:22:42 +0100

Some nice stuff on here. Spent quite some time looking at the bits after you log on. Like the route-finding and the match reports will be good, dont have to do any more newsletters! From a coaching point of view I would like to try it out before I commit to a firm opinion. The idea is great and we have a good start, but i'd like to possibly get involved with some development to the training plans to make it a more effective storage resource. Potential is really good though, tell steve well done, im impressed.

## 6. Committee & Project Team Formal Feedback/Project Evaluation

### PTFC Project Team Feedback:

<b>From:</b>	"chris davies" <info@j4gsoccerschool.fsnet.co.uk>	 <a href="#">Add to Address Book</a>	 <a href="#">Add Mobile Alert</a>
<b>To:</b>	"stephen brown" <sabro1000@yahoo.com>		
<b>Subject:</b>	 PTFC website update		
<b>Date:</b>	Mon, 18 Apr 2006 20:53:06 +0100		

Steve,

Firstly thanks for all the hard work and effort you have put in to this project.

Please find attached some of the comments/ feedback on the new PTFC website.

My personal view is that you have done an excellent job in converting the PTFC committee members thoughts and ideas into a functional and aesthetically pleasing website. We look forward to meeting with you further, to discuss the formal hand over and further population of the site.

We have been in discussion with Baines School, with the idea that their pupils (possibly PTFC players) could take over the long term upkeep of the site (with the clubs guidance) by integrating with one of there I.T. courses, on an ongoing basis. There would need to be discussion on Data Protection/ sensitivity issues etc. but this will help towards the community relations we are trying to build, in line with our club development plan and charter standard status.

I will contact you later in the week with details of our forthcoming presentation evening (I think it's Sunday 14th May) and how we can promote the site to our members. This would be a great opportunity to do a display as, as you know, there will be over 300 members/ parents attending the evening.

Once again thanks for all your hard work.

Chris Davies  
(PTFC General Manager)