CSE 403: Bridge Lifecycle Objectives

Matt Lidstrom

1 Operational Concepts

This project will encompass the creation of a website for playing the game of bridge. It will entail the creation of a centralized, online meeting place for the initiation and staging of games of bridge over an internet connection. In addition to providing the means for playing bridge via an applet, the site itself will track its users over a variety of pertinent statistics as well as the accumulation of any master points earned through the use of the site. Thus users will be able to easily maintain note of their own progress as they utilize the site as well as create or join an existing game of bridge.

One aspect that makes any implementation of the game of bridge in a setting where the players are not physically present in the same area difficult is that it removes some of the avenues of hidden communication between partners (via body language, etc.). This particular implementation of bridge is not immune to this effect, and consequently, it will take at least one of several strategies to minimize this effect. The first, and probably easiest, is to allow for the communication during the game to be done via a user's handwriting (displayed to all players) or via voice (similarly heard by all players). A second option is to utilize web cameras. Note that, while web cameras may come closest to providing for a same-physical-location-feel to an online game of bridge, it also imposes an unrealistic expectation that users possess a webcam. For this reason and due to time constraints, this project will not pursue streaming video as an alternative means of communication during bridge. In any case, one key goal to this project is to provide for the means to communicate subtlety to enrich the game of bridge (as is standard in a classical, physical setting) in the virtual environment of a web applet.

Ultimately the aim of this project is to create a website that nurtures the creation of an online community of bridge players by providing, not only an application that allows a more nuanced game of online bridge, but also a means for the player to establish a profile with the site.

2 System Requirements

The project will ultimately yield a website, and thus the requirements placed on users are appropriate to that end. On the client side, the site itself will be written in a combination of javascript, XHTML, CSS, and will utilize a C# applet (for the handling of digital ink). Thus a user would be required to utilize Internet Explorer 6+ and have the latest copy of the .NET runtime environment.

To take advantage of the optional communications features, a user would further be required to possess

the following: for handwriting the user would ideally utilize a Wacom penabled input device, however a mouse would perform suitably; for voice the user must have a microphone.

3 System and Software Architecture

The system will consist of several connected subcomponents, composed of the following:

1. A SQL Server database that will keep track of all registered users as well as pertinent information describing the user (username, password, master points, etc.).

2. An IIS web server to run the website itself as well as manage a connection to the database.

3. A website written with a combination of ASP, XHTML, CSS, and javascript technologies and consisting of approximately three webpages:

   (a) A main page allowing for a visitor to sign in, create a new profile, view their own profile once signed-in, and view the existing/open games currently being played. Note that this page is largely used to interface with the database mentioned in (1).

   (b) A game page containing the game applet written in C#.

   (c) A profile-creation page the will interface with the database mentioned in (1).

4. A web service designed to manage games of bridge en masse. This includes:

   (a) The initial coordination between the site as well as a game's players to facilitate that game's listing on the site and registration with the database.

   (b) The initial coordination between players of a game. Particularly the initial IP registration between each of a game's players.

   (c) The routine check for an updated "still playing" flag from each active game, as well as logic for handling games that time out.

   (d) The handling of all end-game matter such as the updating of statistics and master points.

Note that the envisioned communications system of this project is diagrammed in Figure 1.

4 Lifecycle Plan

Because this project certainly has potential to overrun the allotted time, it is critical that it maintain the following schedule:

Week 1: Database interface and schema design; Game data structure design, program communication design (how do clients communicate to the server and then to eachother? What is the structure of the communicae sent between clients?); Subproject designation and agreement as to administration of project; Feasibility and risk assessment.
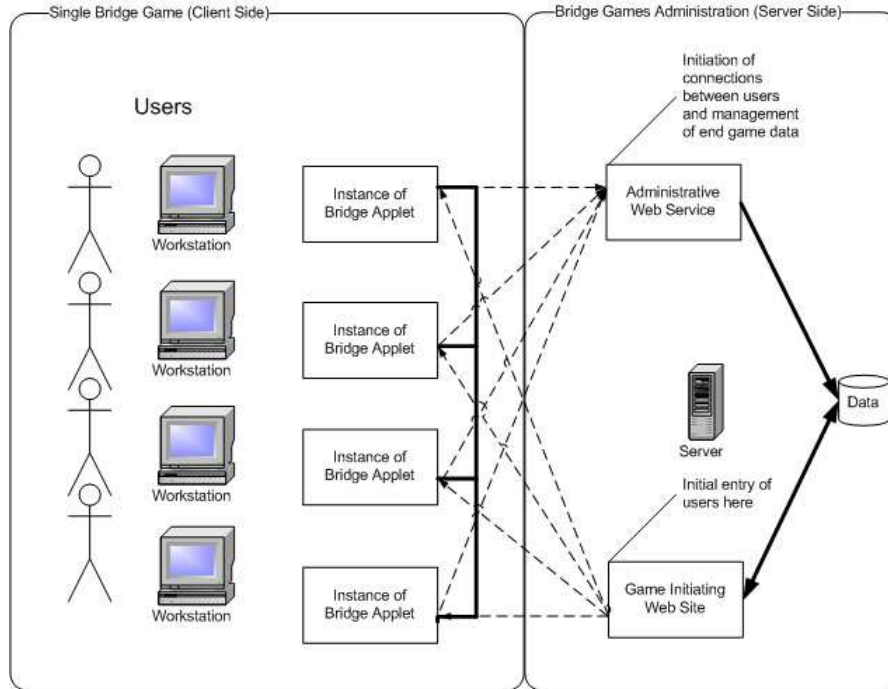
Figure 1: A diagram of the envisioned communications system. Note that boldened links are semi-permanent, in that they exist for the entirety of the execution of the connected processes. Dashed links are more tenuous links, existing for a finite number of communications and then ceasing to exist. All arrows included denote the direction of information travel.

Weeks 2-3: Construction of database and primitive websites (accomplished by team of two with experience in database and website construction; team A); Construction of bridge applet without optional communications methods (accomplished by team of three; team B); Early testing of both the websites and the bridge applet begins (team of one with extensive testing experience; team C).

Weeks 4-5: Assessment and improvement of website aesthetics/usability (accomplished by team A); Addition of handwriting and voice communication to existing bridge applet (accomplished by team B); Improvement of original code based on results of testing (accomplished by respective teams); Begin construction of administrative web service (teams A and B); Further, extensive testing of upgraded websites and bridge applets (team C).

Weeks 6-7: Website aesthetics and usability finalized (accomplished by team A); (accomplished by team B); Full integration of applet and websites via completed, administrative web service (accomplished by team A and B); Extensive testing of integrated product (accomplished teams A, B, and C).

Week 8: Tests completed and issues resolved; Website and game fully integrated and working, ready for delivery.

5   Feasibility Rationale

There is no doubt that the undertaking that is the previously defined project is a considerable one. It involves, not only the development of a novel communication scheme between website and asynchronous applications, but also the development of two separate GUI-based applications (the website and bridge applet). Thus, in making this project more manageable I have already dropped one option I was considering: the use of streaming video as a means of communication between players. Additionally, I believe scalability should be a very small, tertiary goal (note that this is the first time scalability has been mentioned), thus allowing each of the developers involved to focus on getting a more reasonable small scale administrative web service constructed. Even with these concessions however, the shear magnitude of integration and interface also necessitates a realistic prioritization of features should any prove to be too time consuming.

The most obvious first priority is the completion of the game applet, as this is the center-piece of the project. Secondly, as communication is required, a form of the webservice that allows for the coordination and setting up of players is also necessary for completion. The most immediate end-point and primary goal, then, is to implement exactly those two components, and the addition of features such as a centralized website and the tracking of individual users should be secondary goals. In stating this, it is important to note that the stated lifecycle plan does not place the development of each of the individual components to the project in that order. This is certainly a risk, but if the website is to be completed and integrated, work and testing need to start early. Thus, the management of this risk will entail the careful monitoring of the status of all projects and, if necessary, the cutting of the website and database components should these goals seem unatainable given the time constraints.

Regardless of the stated risks I am still confident that the full, previously detailed project is a manageable one especially if the team members involved possess the mentioned qualities.