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Approaching Growth in E-Sports

Designing a More Intuitive StarCraft Tournament Tracking Application

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1. Introduction

In this section a general overview of computer games, online games, the people who play them, and different competitive online games is presented. This section will provide readers with some of the basic information they will need to understand this paper.

In the world of entertainment, everyone is familiar with the concept of sporting events. Whether or not any one person likes to watch sports live at the event or on television, the popularity of this entertainment is unquestionable. One of the primary attractions of sporting events incorporates the high level skill of professional players in their respective games and teams formed by individual players. These people and teams become an identity of the sport, giving rise to discussion and contemplation on past, present, and future games, players, and any other factor deemed important by members and leaders of the sporting community. Around this community a huge industry has been built including media coverage, equipment production, event locations, sporting literature, and much more; the sporting industry is currently worth hundreds of billions of dollars.

In a similar vein, other forms of competition have achieved some form of industry prominence such as debate teams, chess leagues, and math teams. However these forms of competition are on a scale orders of magnitude below the sporting industry. This often has to do with the lack in popularity and accessibility of these forms of competition. Often these competitive forms are approached as an intellectual form, which only appeals to a select portion of the population. Separate to these other forms of competitive entertainment, an interesting form of competition has arisen over the past few years due to the advent of computers and the Internet. Multi-player video games, especially those which can be played online, have become a major form of competition for a growing portion of the population. While the industry supporting competitive video games, coined as E-sports, is larger than other alternative forms of competition, it is still much smaller than the contemporary sports entertainment industry.

Through the emergence of specific games which allowed competitive multiplayer gaming, many people had their first portal into an entirely new form of competition. For all the people who had been previously limited from actually participating in a competitive sport by physical ability or lack of interest, competitive video games provide much lower entrance requirements. This lack of requirements is true both in general physical ability, but also in the form of equipment cost. Sporting equipment can be very costly, and is typically restricted to one sport, whereas gaming "equipment" is commonplace in many households today. A computer is really the only part needed; while computers that can run gaming software at high graphics settings can be expensive, many standard computer systems are able to run the common competitive games at normal or low settings. After this one equipment hurdle has been realized, a low cost is required to enter into almost any and multiple competitive game communities: the cost of an individual game. This lowers the bar for accessibility for completive communities; the effort in improving skills is reduced, and the efficiency is increased. In today's age, because the internet allows players to compete in games against players of potentially matched skill level, gamers are given more entertainment while playing as well as a more dynamic and adapted skill curve.

With this low admittance cost, the E-sports community has grown fast among a reasonably wide player base. As different games were released over the years, a greater player base was attracted leading to a more popular professional competitive scene. Tournaments for top professional players grew in size, number, and frequency. The professional scene grew and adapted along with commercial support through hardware and software. Professional players formed teams, had fan followings, and could even earn a living, depending on the player's ability, skill, and success in the game. Computer hardware and software began to be created to support both professional and casual gamers. The industry grew to provide hardware to give the best frame rates, the most responsive input, and better visual and audio response, as well as software to provide all sorts of features from team communication and teamwork, to online streaming of personal, professional, and tournament games. During the early years of video game tournaments, the media coverage tended to be non-existent compared to the common sport event coverage other entertainment received. With the improvement of the Internet and server services, the media coverage grew incredibly, to the point where coverage of E-sports events is common within the E-sports community. Streaming media especially allowed a form of revenue previously uncharacteristic of E-sports and professional gaming: advertising. In particular, teams have made use of this by maintaining a continually running stream controlled by rotating players in order to be continuously generating revenue.

In addition to typical media and event revenue streams, the industry adopted a technique seen commonly in most modern sporting entertainment. Just as NASCAR drivers are plastered with automobile, gas station, and any number of other sponsors, most of the top professional gamers and gaming teams have sponsors typically consisting of gaming hardware and software companies such as Nvidia, Kingston, or AMD. These sponsors will usually give free products to their sponsored teams and players as well as provide them large sums of money because often a player or team can become a primary representative of the company to the fans. So, in many ways, the E-sports industry has followed in the footsteps of sporting entertainment.

One important consideration for the E-sports industry and community is the growth of the community itself. Given that the top couple percent of players constitute just that: a small percentage of the community, the rest will typically be more fan-oriented casual players. This fan-base has been growing; however, often information and accessibility can be an issue. Unlike common sports entertainment, E-sports entertainment is not presented to every single person with a cable or Internet connection.

1.1. Online, Competitive, and Multiplayer Computer Games

In 1986, the game *Habitat* was made by Lucasfilm games and was one of the first games to have online multiplayer gameplay. Now, after 27 years, there are many online video games with millions of players worldwide; the video game industry has grown immensely since that time to eclipse even the movie industry in size and money. The Hollywood film industry is around a $10.89 billion dollar industry, while the video game industry is worth about 14.8 billion dollars (The Numbers - Movie Market Summary 1995 to 2013, 2013) (Hilliard, 2013). It is this huge growth in profits which has fueled the immense expansion of the industry. This growth has caused, in many different games, a competitive

scene to develop. Competitive gaming in online games such as *League of Legends* or *StarCraft* has commonly come to be known as E-sports or electronic sports.

1.2. Online Gaming

In recent years the size and scale of the E-sports and the tournament scene has increased dramatically, and all of this is due to the community of video gaming. In the beginning of E-sports, the only people who watched competitive video game matches were those who were fans who would devote large amounts of time to playing and watching the game. These people were a minority, and watching video games online was an activity more commonly seen in more enveloped fans. But with the advent of the wide availability of Internet connection and the rapidly expanding video gaming community the idea of E-sports entertainment has become a viable commercial idea. Some of the bigger examples of large online communities are as follows.

World of Warcraft (WoW) is one of the first examples of huge online gaming communities. WoW is an open world fantasy role playing game (RPG) where players interact in a huge persistent world. This game really brought online gaming to a forefront in the realm of games. Most games had online content but relied heavily on single-player offline content to sell their game, but WoW showed that you could have a huge user base with only online multiplayer gameplay. In its peak WoW had over 10 million subscribers (Karmali, 2012). This huge user base helped launch a new genre of video games concentrating on online play, and more importantly competitive gaming.

Another example of a huge online gaming community is that of Call of Duty (CoD). The CoD franchise was one of the first series of first person shooters (FPS); players are in the first person perspective of an armed character fighting in virtual battles. This game was mostly concerned with the single player campaigns when it first started. But with the addition of competitive online play CoD drew many more players to its community. In 2012, Activision, the company that makes CoD, said that the game had around 40 million active online users (Onyett, 2012). CoD has had such success with the online community that E-sports tournaments have started for the game. The prize pool for the most recent championships of CoD is 1 million dollars.

The most recent popular addition to the E-sports genre is that of League of Legends (LoL). This game has grown to have more subscribers worldwide than World of Warcraft, with a 32.5 million total subscribers and more than 1.3 million people playing at any given moment (League of Legends - Player Stats, 2011). The most recent world championships for the game has two million dollars in prize money for the teams involved. This incredible popularity is likely driven by the free to play (FTP) pay scale; you can get any of the features or upgrades that affect game play, however some of these same items can be bought creating a "choose-to-pay" or sometimes "pay-to-win" structure. Furthermore skins (graphical changes to character appearance) are only obtainable through real money purchase. There are similar games which have a "choose-to-pay" option, but none can boast the user base LoL has.

1.3. Professional Gaming

Given the growing popularity of gaming, and the subsequent value of game play and skill, it is no surprise that a professional gaming scene should develop. Much of the common gaming population pays once for access to a game, rather than a month-by-month subscription like WoW, causing the non-

subscription communities to have a one time "membership fee". This difference in membership can easily explain the market growth for E-sports entertainment around these "lifetime membership" communities. Some of these entertainment services which have sprung up parallel to the gaming industry include streaming services for players and tournaments to stream game play, companies to host tournaments, and competitive teams to organize and fund players.

Professional gaming styles varies greatly based on game type. There are two major distinctions that are relevant to online gaming and this project in particular; games fall into continual and linear game-play, or non-linear match style. Role-playing games like WoW will have players log into a game-play environment that is always available and typically always has players in it. This style is typically accompanied by an accumulation of in-game items and money. In most adventure, role-playing games, much of the value is placed on items and in game currency (gold). Using real world money to get ahead in these games is often looked down upon, and restricted as much as possible because of how the game play can be heavily affected by such exchanges. In WoW, players will sell accounts with items that cannot be traded or given to another player or accounts with high Player vs. Player (PvP) rankings; this subverts the actual difficulty in the game and gives the advantage to players with more money, or spoiling parents. In other online gaming, match based games including LoL, CoD, and StarCraft, the game-play and in-game universe are not continually ongoing, but rather the game is played in individual independent matches. Subsequently, there is much less value attached to accounts. In these games value is often placed on a ranking system, which can only be gained and maintained by a player's skill. This continuous versus match style game play tends to be the defining factor between E-Sports online gaming, and other less or non-competitive games.

1.4. StarCraft 2 players/ league

Specific to this project, StarCraft has had a long history of professional gaming. Released in March of 1998, the original StarCraft was one of the most important developments in real time strategy and match based game play. Players practice and train online through matchmaking provided by the game, refining their skills, reaction times, and build orders (the specific order a player chooses to create structures and units in a match). As the competitive aspect grew, tournaments were hosted where players could compete against each other for prizes. Initially this is how all pro gamers begin their professional career in their respective game of choice. Over the history of the StarCraft series, the feasibility of being a pro gamer and how pro gamers train and earn money has changed dramatically, as influenced by major shifts in the Internet and the formation of gaming team, houses, and leagues.

In modern professional gaming, many of the players and teams rely on a fairly new source of revenue in advertising. Online streaming of players playing competitive games is one of the major forces behind the development of popularized E-Sports. Players and teams will stream themselves playing matches online or against other members of their team, in contrast to contemporary competitive entertainment, where the matches are shown, but no one really watches the practice time. Advertisements on streams that players or teams run themselves generate a majority of the consistent income for a player because the stream will typically run for a few hours. These streams differ from competition streams in that the ad revenue goes to players instead of an organization. Revenues

therefore depend on the popularity of the stream, and more importantly of the player. Just like athletic sports, fans develop favorite players and teams, which can be based on skill, personality, or even nationality. The other major source of income is tournament winnings, however they are not a consistent revenue and can be non-existent for players or teams with sub-par skill levels. Finally, gamers and teams earn a lot of money and computer hardware from corporate sponsors like Razer, Kingston, Corsair, etc. These companies give top tier players money and computer hardware in an effort to promote their hardware under popular players, implying that by using their hardware in fans' personal computer (PC), they will be able to play more like professionals. Other than streams, which only began to become popular and feasible in the past few years, the other revenues have existed for most if not the entire lifetime of E-Sports.

Starting from the top, some of the highest earners in StarCraft make more than $300,000 per year. Currently the player MC of team SK Gaming makes more than $365,000 yearly, Stephano of Team Evil Geniuses makes $216,000, and Nerchio of Team Acer earns almost $92,000 (SC2 Earnings - Home Page, 2013). Due to the divisions created by continental boundaries, such as separate online matchmaking realms for America, Europe, and Asia, different local or national tournaments, and different fan bases, general numbers for each continent should be distinguished from one another. In the Americas, some of the highest earners don't make more than $100,000; starting at $77,000 from Huk of Team Evil Geniuses, the earnings of primarily North American players drops off to below $10,000 within 15 of the top players (SC2 Earnings - Home Page, 2013). For Europe, the player Stephano is an outlier compared to the rest of European players; MaNa is the next closest earner, making $94,000, with more than 50 players earning more than $10,000 (SC2 Earnings - Home Page, 2013). Finally, In Korea, over 10 players make more than $100,000, falling to below $10,000 after more than 80 players. Players who make large salaries tend to number very few, however they are often the most popular either because of their success. However, sometimes professional gamers become more successful because of their popularity.

One important aspect of professional gaming is the fact that the lifestyle of the professional gamers is often somewhat misunderstood by people not familiar with the scene. Professional gamers spend most if not all of their time playing their competitive game. It is their job and entire livelihood. Some players, after high school continued or are continuing onto college and have other skills, however other young players dedicate their time to practice immediately out of, and during, high school. Given that many players do not maintain a long successful career in E-Sports, often they will eventually pursue a secondary education or other work in competitive StarCraft, such as casting, hosting, or announcing for StarCraft tournament matches. The StarCraft, and E-Sports community provides lots of opportunities for people to support it and have legitimate jobs created by it.

While not a new development, gaming teams and houses play a major role in the propagation of E-Sports, and the development and addition of new players. Most teams have an actual house for their players to live in, in order to facilitate teams practicing together and team building. Most if not all members will typically live locally in or near the team house. However due to the nature of online gaming, it is not inherently required for team members to be geographically close. Teams exist in many major geographical regions of the world for StarCraft, including North America, Europe, Asia, and Korea.

The reason for Korea's separation from Asia in regards to StarCraft stems from the unprecedented popularity of StarCraft in their culture as well as the heighted level of skill resulting from this popularity. Overall, there are about 30 premiere teams in the world, with the fewest in North America and Asia, and more teams being concentrated in Europe and Korea. This causes there to be varying levels of competition over the globe. Often the size of the prize pool and number of players determines or represents how far players travel to come to a tournament. Most notable tournaments will be international, especially those in Europe, however global tournaments tend to be the biggest events of the year.

An oddity in the global scene unique to StarCraft is the dominating South Korean players in the professional scene as mentioned before. When the original StarCraft came out, the country became so fascinated with the game that it is now the *national* E-Sport of South Korea. StarCraft is so popular even among the common population that games are shown on live television much like traditional sporting events in America. This immense popularity has caused the professional gaming scene to explode and push player skill to a much higher level in South Korea than the rest of the world. Second to Korea, Europe is the next largest StarCraft E-sports region and will typically hold a majority of the Quarter-final positions in tournaments with little or no Korean involvement. Europe is followed by North America and Asia respectively in StarCraft E-sports competitiveness. Given that Korea is the only region to televise their StarCraft events, all regions (including Korea for international fans) rely on online streaming services to broadcast tournaments, however between regions there are differences in the quality and post-tournament video availability. The availability of these and other features is dependent more on the E-sports companies in each region. However, across regions, many of these companies develop similar business models to remain competitive, causing the feature differences between companies to be primarily inter-regional. In all of professional StarCraft, non-Korean players are referred to as foreigners and the community will often support any of the final standing domestic players when the non-eliminated players are mostly Korean, as often occurs in international tournaments.

Additionally there are local leagues scattered everywhere. Individual players or groups of friends playing in much smaller tournaments hosted by small businesses or gaming societies and groups allow fans and non-professional players to take part in the same kind of competition excitement. Regardless of the competitive nature, it is deemed non-professional because of the greatly reduced money investment and amateur skill level, which limits the ability for these level of players to earn a living, if any money at all.

The most important part of competitive gaming and E-Sports is the opportunity to compete against other players. This has made organizations like Major League Gaming (MLG), an American tournament organizer, Global StarCraft II League (GSL), a Korean organizer, and DreamHack, a European organizer, incredibly important to promoting and furthering E-Sports and the competitive gaming scene. These organizations, along with less than ten other major organizers, host nearly all the popular events for top tier professional gamers. Prize pools for tournaments, which includes all the prize money to placing (1st/2nd/3rd place, etc.) players, can range from a few thousand dollars to $250,000 for the largest international tournaments or domestic. Tournaments are typically held at a site in the same local regions where many of the Teams reside. Whether this is because the tournaments are hosted near

large populations of gamers and fans, or because the competitive gaming population moved to follow the competition is difficult to determine, but either way it's more efficient to have both in the same geographical region. Some tournaments will restrict participants from being outside the host nation, region, or continent, however many are open the global scene.

1.5. Fan Base and Tournaments

The size and scale of professional E-sports grows every year, and an increasing number of people watch the events which draws in more spectators. Recently the IGN Pro League in Las Vegas sold more than 10,000 tickets for spectators to attend the event, along with attracting over 346,000 concurrent online viewers (IGN Pro League Heads Back to Las Vegas for IPL 5, 2013). This event featured professional gamers from LoL, Shootmania, and StarCraft II, all competing for prize money and acclaim in their respective communities. Because of the widely spread global market of people who enjoy watching the matches, organizers for the event had people from around the word come to play, with players from Europe, Korea, and North America coming together to match up against each other.

With the global appeal of StarCraft II the community has grown substantially since the release of the game in 2010. By creating a competitive experience with an updated graphics engine that made it easy for players to match up with each other and improve their skill the number of players has grown to more than 4,250,000. With the release of the most recent expansion to the game the number will continue to grow. The players of these E-sports games is an important aspect of the fan base because often these players are playing to compete, even if casually, and therefore a majority of the fan base is likely to be made up of casual gamers.

With the global following of StarCraft, players who watch the online matches typically develop their own favorite players. While some people will prefer to cheer for someone based on their nationality, others care more about the personality of the player. One might end up watching a Korean player stream his or her matches, while there are other observers sitting all over the world. This helps to create a very open community, where people from around the world can get together to play and exchange strategies and discuss techniques. While the global scene of StarCraft has grown and expanded, the local scene has had a much smaller start. While small, local competitions take place. There aren't really many local teams that people will follow. One of the more popular, small leagues, is the collegiate league. Which consists of 315 different schools around the globe that compete against their own division, so students can support their own universities if their school has a team in the competition.

Fans can play personal games for practice or enjoyment, however league games can happen most days of the week. Tournaments can be hosted on weekends, including long weekends usually ending on Sundays. The collegiate leagues often play games online, rather than on a closed local area network (LAN). This allows college students, who often have varying obligations, to play games at greater leisure. There are similar leagues of online game tournaments which usually go on for a few weeks while all the matches are being played. For local tournaments the competing players and their friends will be tracking the match outcomes or streams, whereas collegiate tournaments attract a more general fan base across college students. Usually there are time limits to when the games can be played, as in they need to be done by or on a certain date, to keep the tournament moving at a reasonable

pace. However these tournaments will also typically schedule specific and evenly spaced times for the championship matches where only the top teams and players remain. This scheduling is due to the fact that these games will typically be watched by more fans due to a higher expectation for skill level.

Additionally, there are leagues which are similar in online nature, but rather than being aimed at college students, they are aimed at the higher professional teams and players. These kinds of leagues are somewhat more typical for StarCraft rather than team games like LoL, which require more of a time and organizational commitment across a team of players. This causes LoL tournament leagues which are played online to be more likely collegiate rather than professional.

MLG is the Major League Gaming organization, they are a large company that helps manage and stream the competitions around North America. While MLG has had several appearances on broadcast television the main way they reach their audience is through streaming online. This is where cameras are set up at events and the video is fed to users through the internet. They aim to make pro gaming a viable and easily accessible means of competitive entertainment. MLG streams many different games such as League of Legends, Halo, and others. While MLG only operates in North America there are many different companies that hold competitions around the world.

Overall, it should be noted that there is a major difference between players due to each individual's personality. This personality dimension becomes important especially within team based games. In LoL for example two teams of five players compete, so being able to coordinate and cooperate is essential to success. A common stereotype, be it valid or not, is that many of the better players will become increasingly frustrated with people they assume are not being effective team mates. Often there is a lot of anger and disrespect when a team is not cooperating. There are some general slang terms to describe players such as "ragers" for players who will lose their temper quickly, and "trolls" for players who intentionally play poorly to anger their team mates for their own entertainment. Surprisingly, in non-team based games such as StarCraft, a greater portion of people do not tend to have such negative attitudes, or perhaps their attitudes are less insidious to the community because of the one-on-one isolation of the games.

While each person's experience is different, some generalizations can be made about the E-sports community members as a whole, and in individual games. The distinction between each game's community can be startling and can easily be extrapolated from some key gameplay aspects. For example, many of the players and community members are generalized as mean and angry people. One of the major reasons for this common personality trait is the online game-play form. Due to the fact that many of the players are not going to know or see any of the people they are playing with or against, a reduced level of empathy towards fellow gamers or community members arises. Players and community members are mean to each other because they are anonymous behind the Internet. The most unfortunate part of this community issue is the fact that these negative members are often the most visible because of their negativity, which can keep some players from ever approaching the community.

In a strange contrast to other E-sports, StarCraft seems to have a lower rate of negative members. Many more of the gamers will be well mannered toward each other regardless of not knowing the other player(s). It appears that this aspect arises from the difference in game-play. In

StarCraft, the matches are primarily played one-on-one, whereas the matches in LoL or CoD are almost exclusively played as teams of gamers rather than individuals. These team matches require coordination and cooperation in-match, which introduces many uncontrollable factors from other players. In contrast, the one-on-one StarCraft matches is a simple comparison of two players' direct skills, so there isn't anyone else to blame for losing or winning. In team matches, if one player is underperforming greatly, it can result in a loss regardless of the rest of the team's skill. So either inexperienced players or players who are intentionally losing can anger other players, and produce negative comments and negativity as a whole in the community.

1.6. StarCraft 2 Watchers

In contemporary sport watching most of the people who watch the events do no actively participate in the sport. In other words, normally many people watch football but most people do not actively play football competitively. But in the E-Sports world you can very easily play whatever game you are watching. This means that many more of the people who watch the events are actively involved in the community. Many people will eventually buy or play the game they are playing at some point because it is so easily accessible. However the draw of watching professionals play the game with an unmatchable skill level is just as big as that draw for conventional sports, giving rise to its popularity. One of the main difficulties and differences is that the games are computer games, with very specific play rules and restrictions. The virtual environment is completely limited, and is constantly being balanced through "patches" that are released to be downloaded by players. StarCraft, in comparison to other competitive games, has many more elements to keep track of, which makes watching or playing the game confusing, especially to newcomers.

A social scene that has been growing in popularity very recently is Barcrafts. These are venues, usually bars, which will allow groups of people to come watch the E-Sports games being streamed live during some tournaments. This new concept shows a mirroring of conventional sports entertainment, where many popular sports are often shown on television and the event is more advertised for people to come watch it at a bar. There are still very few venues that host Barcrafts however, because the games are not played on a television channel in most countries, Korea excluded. The streaming of the live event requires an internet connection and sometimes a cheap subscription fee paid to the tournament organizer. Contrary to the sporting events, which have very expensive cable subscription, bars usually already need an internet connection anyway, and the turnouts for Barcrafts have been growing, offering more revenue to the bars which open their doors to E-sports fans, at least when it doesn't conflict with regular sporting events.

1.7. Global Size

Having people around the world interested in watching competitive E-sports creates many interesting opportunities for the organization of the casting. Because you have people playing the game live, somewhere in the world if some people want to watch the games live they would need to be awake for that particular time zone. This means that it is good to have two options available for people. The first option is having the game available streaming live for the dedicated fans. But afterwards one would want the game available as soon as possible for people to watch on demand. If people can't view the

stream live then they may want to watch the games at their leisure. Some organizers will restrict videos on demand to members who pay a subscription fee.

The second problem brought about by worldwide distribution of competitive gaming, is that of the language barrier. The professional companies need to have streaming in the languages that the fans want. The most common being, English and Korean. So having these languages will draw people to watch your stream and add revenue. But, if a fan doesn't speak either of those languages the options are pretty limited. There are some people who do "unofficial" online casting in their own languages, creating small fan followings for themselves. Additionally, the tournaments hosted in European countries will sometimes have the native language as the main casting desk, and will have other casting desks for English or Korean, especially for international tournaments.

2. Problem

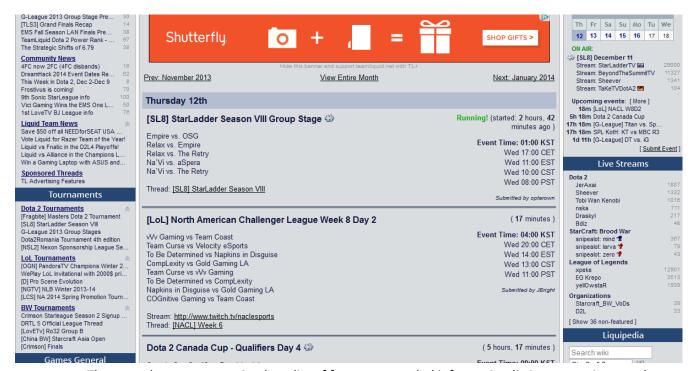This section of the report will detail what interfaces are currently available. We will talk about strengths and weaknesses. This will give readers a better understanding of what our program aims to work alongside with. The main purpose of this project was to create an improved replacement for the current systems for E-sports Tournament tracking.

2.1. TeamLiquid Interface

The current way for most people to get information about tournaments is through the website, www.teamliquid.com. This website is maintained by a professional SCII team, Team Liquid, all the data for people to find is located in one section of the website. In this section there are listings for all of the tournaments, with no real way of sorting through them or arranging them by any search criteria. This is fine if someone knows exactly what they are looking for. But if they are new to the system and want a more selective listing then there are no options. This is what the current interface looks like when you navigate to the site. There is small toolbar is located on the right hand side of the website.

This displays some currently streaming games and other assorted events going in currently. If the user wants to see what is happening on a different day he or she can click on the day they want to look at. This leads them to the page below.

The page that a user sees is a long list of forum post styled information listing event times and any other information that was provided by the person who submitted the listing. While this is good for allowing easy access to event information, it is not very selective. If one wanted to see all the matches with a specific player then a search through many old Videos on Demand (VODs) is the only option. Other information can be found in forum posts on different online message boards. This interface is not very user friendly; if a user has been using it for many years then it works just fine. However, if the professional gaming industry wants to continue attracting and inciting interest in people then a system that is easy for new users to jump in and use needs to be made available. One application that the group took some inspiration from is Google calendars. Google calendars is a cloud application available to all Google accounts. It is an easy to use interface for building calendars through a web browser window. It is an easy to use interface that makes it easier for users to stay organized with their schedules. While the TeamLiquid tracker provides all the data a user could need, creating a more customizable experience would create a more user oriented system.

2.2. Weaknesses

TeamLiquid.com's tournament tracking pages consolidate a lot of information regarding E-sports tournaments. Each tournament has a specific page with as much information as is available for each tournament. These pages are listed in a few different places, mostly categorized by general size, player turnout, and prize pool. The professional tournaments are compiled into one list, where others are placed into a less visited list. Additionally, older completed tournaments are placed in an archived list in order to allow fans and players to look back at previous winners and tournaments. This system is

far from perfect though, and in a lot of ways does not provide some key intuitive features or appear very inviting to new fans looking to find tournaments to watch.

Some of the missing features was a graphics based timeline or organization which would allow a more clear representation of when tournaments were happening. This simple interface change would allow fans to intuitively see how tournaments conflict with each other and which events were directly upcoming or currently ongoing. Currently, the lists display some basic information such as which events are ongoing or upcoming with start month, player number, location, series or host, and winner/runner up. The actual ability to determine which events are running or upcoming on the weekend or are running concurrently requires looking at each comprehensive information page individually and having a calendar or good intuitive knowledge of the days of the week each date is associated with. Additionally, to new users the interface doesn't provide a very straightforward interface to be able to guide people to the streams they may want to watch. The list style forum board for finding tournament event information does not provide the necessary features or navigability to effectively get tournament information to the fan community. An interface with a graphical component could greatly increase the accessibility of all the tournament information to old and new fans.

Furthermore, the ability to actively track tournaments to receive updates about new events or new and revised information is also something the current interface does not provide. Overall, the interface is a rigid webpage, without much room for configurability or improved functionality for the future. When the original event page is created there is often not a lot of information able to be entered onto the page. With the announcement of a new tournament a page will typically be created on the Team Liquid site, and as more information is released or discovered, it is updated or modified. Some of the more crucial information like run dates and streaming links will often remain consistent from the time of the announcement in order to keep people from missing the event. However, it is possible for details to change, and being able to know when that happens is something not provided by the current system. This could cause people to miss an event they wanted to see, or not realize that one of their favorite players is showing up which would cause them to want to watch. Being able to specifically track selected tournaments, or selected players when new tournaments are entered would allow fans to easily find and watch tournaments much easier than the current system. All of these unimplemented features cause the Team Liquid system of tournament tracking information to be useful, yet not completely effective.

Just as people follow multiple sports, it is possible for people to follow multiple E - sports. Given the limited diversity in E-sports games, it could be much simpler to track all of the E-sports tournaments. Currently, the TeamLiquid Site is the only location to get information about multiple games in one place. However, the information is segregated into different sections and cannot be easily compared. Even when a tournament is hosting multiple games, the information for each game is provided on separate Web pages and are listed in completely separate lists. This kind of separation causes tournament schedules to be very hard to compare between games.

2.3. Strengths

While there are many weaknesses, the availability of this information is crucial for the community to access. Without the Team Liquid interface, there would be no consolidated access to all the information for each tournament. Each page contains as much information as is available across media announcements and organizer hosted pages. Dates, times, prize pool, number of players, race distribution, location, format and layout of matchups, and viewing options such as Videos on Demand (VODs) or live streams are typically all contained on the page by the time the tournament is nearing its start date. The page contains many links for much of the data which allows the community to find more information about a specific organizer, player, or many other aspects. The forum entry also allows people to post questions, clarifications, or other comments directly at the end of the same page and start discussions. This interface supports the community by providing all the information that could be needed for each event, while allowing the community be involved in and discuss the event and its details.

While there are not a lot of searching options, it is possible to find specific events by searching the forum threads. The list is ordered by general date, and keeps most of the information accessible at this one central list. There is at least one other list for the local classification of tournaments which should not be included in the major professional tournament list. Throughout the forum format, there are typically links to other relevant pages when they are available, which means that it is possible to navigate to an event's page from an organizer page or some other page, giving the greater ability to find events specific to a certain field like organizer. This, however, does not provide the overall search-ability or configurability desired for easily finding and viewing E-sports tournaments. Additionally, the forum style list has the additional feature of community submissions. Users with teamliquid.com accounts can post information about a tournament which will be used and verified to create a new entry in the forum. The current interface is necessary to facilitate sustaining the community, however it is not ideal for growth and development of the E-sports scene. A more intuitive system is required to be more inviting to new members and a broader range of people.

2.4. Organizer sites

Tournament organizers have sites to advertise their upcoming events, and these sites contain detailed information about the events but sometimes omits details, and often emphasizes certain items that the community finds unimportant. Most often the site is a simple page designed like a flyer with some useful information, but without a rich breakdown of tournament information. These cover pages are usually redirected to from the main page of the website, making them very accessible and very easily found. However these cover pages are only present during the tournament and the time leading up to them; the pages disappear after the tournament is complete. Additionally, the cover pages are typically not very dynamic and will not display information throughout the progression of the tournament. Furthermore, organizer sites do not contain information from other competing organizers. While the information provided by organizer sites can be useful for a quick overview or easy link access to active streams, it lacks a comprehensive and persistent pool of information regarding the participating players and the progress of the tournament.

For example, the Acer Teamstory Cup is a tournament in which SCII teams compete in a group style play. Each group has five teams matched against each other, and within each team matchup, each

team has five "lives." With each loss, the player's team loses one life, and the team loses the matchup after losing five games. The main information page can be found at http://acer.taketv.net/, and is pictured below.

The image shows a banner-style announcement bar with the recent team matchups below. On the left hand side, current timing information is displayed such as the replays that are available, the current streams, and the next match time. The right hand side shows the ranking of the teams. This page does display a good amount of basic information relevant to the tournament. In addition to the main page, there are News, VODs, and Standings page relevant to the tournament, which display marginally more information than the home page. Finally, the tournament page has the roster of all members of each team which could play in each matchup. The layout of this webpage is very useful for the Teamstory Cup tournament. Any information about other tournaments or information about teams such as their nationality or recent tournament titles. Much of this information is not really relevant to Acer, the sponsor, as including other tournament statistics or results essentially advertises for other sponsors. Through this example, it is evident that the sponsor-managed pages can provide good information specific to its tournament, but is very poor at covering any extra information.

The group's approach involves having data on the matches and events and allowing the user to add what they want to their tracker. This eliminates any extraneous information that doesn't interest a user. This also help to attract users who want to start watching online games because it allows them to narrow the field of search instead of being flooded with information.

3. Talking with the community

In this section the feedback and advice from the community will be discussed. It will also elaborate on what the group did for this project.

3.1. Site manager

While many of the conversations with the Site Manager and Designer were strange, they often helped the team develop a better understanding of what was needed or expected. Most of the initial conversations focused our logistics and the project as a whole. The conversations began with a discussion of what we planned on providing for the site. This included the tournament tracking application and its features. These features were outlined in a previous document by the website group and were refined by the website manager in later discussions in terms of expected interface and performance. Additionally, some ideas for other aspects of the project were discussed. Including doing other promotional media items such as images or interviews with popular players or casters.

There were a few other hardware projects discussed such as producing toys or other electronics. However these ideas were not really aligned with the community the group was trying to interact with. These projects would have been extra work and taken away from other aspects of this project, and as such were not included.

With the help of our Advisor, we settled on focusing our efforts towards the tracking application in order to focus on a single facet and produce a quality result. Additionally the graphical user interface proved more complex to develop that originally anticipated, especially with the leaving of one of our original group members. Much of the remaining discussion with the Site Manager and other developers on the site team was regarding the development of the application. Discussions of the website included storage methods for the list of tournaments and how the application would work with the website server. The ability to directly pull tournament information automatically is a feature that was discussed, but the automatic feature proved to be outside the scope of this project. A manual entry system was decided upon with the website manager, with very few specifics. Java, was decided to be used for the project, so a servlet container was required on the website hosting service. The servlet is the portion of the application that runs on the server to manage the actual list file that is stored. A servlet container is the java environment that is required to run it.

After some initial coding work and continued progress and conversing, the Site Manager sent more specific desires for the aesthetic design of the layout. A few rough sketches made in Microsoft Paint were sent to clarify the look and feel of the design. Because of the professional aspirations of the website as a whole, the Site Manager also requested that the tracker follow a similar color scheme as the original site in order to keep uniformity. Actual aesthetic matching to the site graphical design was not feasible given the time constraints. One of the more recent discussions included intent to get an alpha product to the community in order to test it and receive feedback. This however proved unsuccessful as the tracker required too many bug fixes before it would be ready for release.

Overall the interactions with the Site Manager were informative and helped the group learn to understand and meet given expectations. Because the group was planning to work with a more

professional development team, the members learned how to interact with another group and gained experience with regards to understanding and meeting expectations. The interactions with the Site Manager were typically informal, however talking with some of the other site Coders and artists gave a better impression for the group dynamic and professionalism. Regardless, the input from the team aided in focusing the project on specific features and goals and the future work would need to be done.

3.2. Original plan

Originally, the project was very open ended. After some advising, the community was polled for input and ideas as to what could be done to improve the available tournament tracking interface. Through sites like Reddit.com and TeamLiquid.net we were able to reach out to players and fans to gather input for ideas, and later for surveying the community for feedback and other input. On Reddit.com, there are subreddits, which are stylized communities with a specific focus, viewpoint, or interest. Unfortunately, the subreddits relevant to this project and community, r/StarCraft, r/esports, r/leagueoflegends and other competitive gaming subreddits, often are small and unresponsive to requests for feedback or input. However it was through Reddit.com that the group first made contact to the Site Manager for hosting.

As the idea gained momentum a small group of us was formed by collecting a few students who showed interest in the ideas generated by the Reddit post. Eventually we found an official advisor in the Computer Science department. With a group of three students there was a loosely planned project with some ideas for objectives. At the beginning of the summer the original plan included three team members working primarily on coding a tournament tracking application to be hosted on a developing website. The advisor rightly dissuaded the group from taking on more project facets, as the amount of work IQPs can be a little difficult to fathom until it is underway. Our advisor stressed the importance of gaining feedback and going through multiple iterations to get a solid product to the community. In addition, the feedback would allow the group to gauge the community's response to the project and the effectiveness of the experience as a whole.

Mainly there was two coding members focusing on the development of the project and one person connecting with the community and potentially the site team to collect feedback and information in order to keep the project on the right track. He obtained updates and post-able information to ensure that there weren't any pressing issues with the current design that needed to be fixed for either the clients or the hosting group of the application. Getting usage statistics and feasibility of use across a wide range of platforms and browsers, as well as ensuring a reasonable amount of efficiency and stress testing would be useful to a long term deployment and continued development of the application. Overall, this was the basic expectation and mindset in approaching this project.

3.3. What Ended Up Happening

Many issues arose throughout the propagation of this project. First and foremost, the loss of one of the coding group members severely hindered progress throughout all parts. He was unable to do any work on the project before leaving, which loaded all the coding and organization onto one member. The group quickly got behind on coding and as a result community involvement and feedback was limited at best. There were fewer updates that got posted because of the necessity to continue working

on developing the application. Because the main purpose of the application is to provide a graphical calendar interface to more effectively view and manage tournaments, this part was the primary focused.

Throughout the initial development process, there was some involvement with the Site Organizers, and little involvement with our Advisor. This caused additional degradation of planning and progress simply because the guidance was not present as a motivating factor. These beginning months after the summer were predominantly unproductive, simply because there was no organization between us. During the summer, all of the work and progress was on the coding. The new graphic interface was developed and the client/server relationship through Java was conceptualized and implemented. This required a lot of research on servlet operation and the Internet communication between servlet and applets. After the end of summer some surveys and feedback were received, but the amount of data collected was much less than expected, and coding progress was much less than during the summer months.

As the project progressed, discussions with the Site Manager and Developers became further and further apart as the group focused more on writing and data collection than development. Regular meetings with the Adviser, which were necessary from the beginning, started. This helped keep us motivated and focused on the end goal. The features of the application as the project drew closer to an end were truncated. While there was still much to be done for the application, they are now considered future work, and all bugs and half completed features were rounded out before the end in order to facilitate easier progress for future groups. The final weeks of the project included completing features and documenting the code as well as consolidating data into the report.

3.4. Players and observers

To gain a better understanding of what users in the community wanted from a tournament tracker, we put together a survey and posted it to a website called Reddit. This is a website made to share information. Users post links to sites, articles, or pictures they want to share with people. We relied on subgroups of Reddit, called subreddits. Subreddits are individual online boards where users post information about specific topics. For example there is a subreddit dedicated to gaming, and in this subreddit users post pictures, discussions, or news about any video game. To better aim the survey at users that are interested in topics pertinent to the project. The survey was posted on three different subreddits. The first of which was the StarCraft subreddit; this "sub" is dedicated to everything StarCraft related. The second subreddit was the MLG board, where the group thought that most users would be interested in the professional E-sports scene. And the last was the Esports subreddit where users are interested in all esports.

The questions on the survey were aimed at StarCraft 2 competitive online events and how users currently track and watch the tournaments. By gaining a better understanding of current users' methods we hoped to gain more insight on what users might want in a future application. The survey, in the appendix, was taken by 65 people in total.

The first question that appeared on the survey was asked to get a general view of the audience this survey reached. Optimally many different people would take the survey, those who play daily to people who never play. By gaining a better understanding of the population we can better interpret and analyze the results. The question and the response data are as follows.

Question 1: "How often do you play StarCraft?"

Multiple times a day/daily	27
A couple of times a week/weekly	20
A few times a month/occasionally	12
Never	6

There were 6 people who responded with "Never" for this question, which seems strange because the survey is concerned with the StarCraft community. But the conclusion that we drew from this is that there are some users who watch matches but do not play the game themselves. These people could possibly be people who watched and or played the original StarCraft and continued the habit. Or potentially people who enjoy watching the game after having played a few games when StarCraft II came out. It seems that the ease of playing that we mentioned earlier shows itself here. Looking at the numbers we can see that number of people who play the game at least once a week is more than double of the people who never play or play infrequently. The second question was about the watching habits of the survey takers.

Question 2: "How often do you watch StarCraft tournaments either through a streaming service or at the event?"

Every weekend as long as there are free streams	34
Occasionally	18
Every weekend, and I pay for many of the pay-to-view streams	12
Never	2

There were 2 people who responded with "Never" to this question, this is interesting because the survey was aimed at people who watch tournaments online. These people are potentially people who play StarCraft but do not watch any of the competitions. The first two survey questions are essential to understanding our audience. Therefore we decided to perform a cross tabulation between

the results of the two questions. Cross tabulation shows the interrelation between two variables which helps you to find and understand relations between them.

Count of How often do you watch StarCraft tournaments either through a streaming service or at the event?	How often do you watch StarCraft tournaments either through a streaming service or at the event?					
How often do you play StarCraft?	Every weekend, and I pay for many of the pay-to-view streams	Every weekend as long as there are free streams	Occasionally	Never/almost never	(blank)	Grand Total
Multiple times a day/daily	5	18	4			27
A couple of times a week/weekly	3	9	7	1		20
A few times a month/occasionally	1	6	6			13
Never	3	1	1	1		6
(blank)						
Grand Total	12	34	18	2		66

The results of this cross tabulation are relatively straight forward, with the biggest accumulation of people in the first two columns. These numbers should be high because this is the population that the survey is aimed at. By looking at the data we can also extrapolate that people tend to watch the free streams as opposed to paying for them. The data also seems to suggest that the people who play more often tend to watch online matches more frequently. If we look across the row in the "Never" field we can ascertain the distribution of people who never play StarCraft but potentially watch it. As previously stated there are a number of reasons as for why they do no play the game but enjoy watching streams. While all this data seems to suggest different conclusions, there really isn't any concrete conclusion to be made. Performing a Spearman rank correlation we get a correlation value of 0.22. The Spearman rank-order correlation shows us how related our data is. So the closer the number gets to 1 the more correlated it is, and the closer to 0 the more unrelated they are. So a number of 0.22 means that they are a little bit correlated but not in any major way. Therefore no real conclusions can be drawn as to the habits of watchers and players.

The next question was geared to show the group where people go to get their information about StarCraft matches. After seeing what works well for people we can attempt to implement similar features to make a better product for everyone.

Question 3: "Where do you get information about tournament viewing opportunities? Please list any that apply."

TeamLiquid	43
Reddit	29
Twitter	10
Twitch	5
Facebook	4
Friends	3
GOMTV	2
Word of mouth	1
League Websites	1
Team Websites	1
IGN	1
IPL	1
In-game	1
Teevox	1
sc2sea	1
Barcrafts	1
taketv.net	1
Day9	1

The top result from this question was TeamLiquid; the group already knew that this would have many responses because it a well-established information hub. The next highest result was Reddit, which is interesting because Reddit is user motivated, meaning that there are people who make an effort to post on the Internet boards to alert other people to events that are happening. After Reddit, Twitter had the most responses. Using Twitter to find out about streams and tournaments allows users a small amount of control over the exact information they are given. If you follow a specific player or team on twitter, you might get updates about the streaming activities of those individual people instead of a blanket overview of all the streams available, like a user gets if they use TeamLiquid.

The first yes or no question asked is a very important question to the project. It gives concrete proof that at least some individuals have interest.

Question 4: "Would you use a tournament tracking application that has a graphical interface over the other current sources?"

Yes	51
No	13
Blank	2

The question resulted in 51 yes answers and 13 no answers, showing that a large part of the population would make use of our graphical program. These numbers imply that there is a significant demand for a graphical application that makes tournament tracking easier.

Question 5: "Would you want information on events other than the "big" events (such as MLG, or GSL hosted events or what can be found on the main Team Liquid events page)?"

yes	53
no	11
blank	2

This question had very predictable results, just like a regular sporting event, fans are interested in the biggest events. To be able to see the best players compete is interesting to all people even if they are not your favorite player or team.

Question 6:"Which of the following features would be important/of interest to you in a tournament tracking tool with a graphic calendar interface? Check all that apply."

All of the features were chosen at least once, we felt that this meant that the overall product has a lot of potential future content that could be added to continue to draw more users.

The sixth question was an open ended answer where users could write in their own ideas.

Question 7: "Are there any features not listed that you might like to see or would need in a tournament tracker?"

The ideas fell into four overall topics; the first topic was having direct links to streams in the application. Users want easy access to the tournament streams, as opposed to having to follow multiple links or having no link at all. The second feature was an ability to have tags or search-able fields for the tournaments and VODs; users would be able to easily narrow down their search to things that they are looking for. An example would be a user looking for games under twenty minutes where the Zerg race was played. The third most requested feature was a notification system. An option to be alerted to a starting tournament was requested. Users asked for a text, email, or popup to be triggered when a stream for the tournament the user wants to watch comes online. The final feature people wanted was

a way to visually see the tournament flow. Because StarCraft tourneys are usually complex and involve people coming in in seeded positions having a visual representation that users could follow would aid people in understanding the elimination and flow of players in a tournament.

The survey gave us a substantial amount of good data about the demand for a tournament tracker application and the specifics of what features that users would find helpful, which helped us throughout the creation process.

4. Designing an interface

In this section, the process of designing the program interface will be discussed. This includes the initial features that we planned, the process that we went through, and the final product. After contacting the community and starting communication with the site manager, a few ideas were generated. The main idea was always a tournament tracking application, however the site manager brought up many more potential ideas which were considered. One of these included promotional productions for the application and the site itself. Interviews with popular players, casters, and even fans were on the table before the project started in order to add a better sense of the community into the project as a whole. This would help "outsiders" understand what kind of community this project was helping, especially because it is very apparent that many people do not understand or know about the community as a whole as well as help promote the site and application being produced. However, as stated before, the development proved to be a big enough project without extraneous elements. Along this same thought processes, the other ideas were excluded as the size of the task of designing an interface became more apparent.

Throughout the development of the tracking application, the goals and end features were modified a few times in order to keep the scope of the project reasonable. This caused the project, originally intended to be a replacement for the TeamLiquid.com interface, to be a prototype application replacement.

4.1. Calendar Interface

Initial Idea

There were many initial features to include as the defining aspects in the project. First, in order to dramatically improve the accessibility of tracking and watching StarCraft and other E-Sports to bring this entertainment scene to a wider audience, the tracker needed to have a graphical calendar interface to visually see when events are happening. This would help the fan base and community grow, and it would help the current members to immediately understand which events were happening at any specific time, and if there were time conflicts or multiple tournaments to watch.

Process & Feedback

From the beginning of application development the original intent was to create an improvement for the TeamLiquid.com solution. The first feature developed was the calendar interface. The calendar hinged on the LocalDate class, which gave the current date. From this class the application is able to derive the current date as well as the dates to display on each month of the calendar interface. The calendar days are automatically calculated and filled in via a day of the week algorithm which takes a given month, day, and year, and returns a number associated with a day of the week. A list of events displayed on the current month was included in a pane below on the same window. Through this, the application places each date on the correct day and determines the first and last day displayed on the month, and the number of weeks to display.

After successfully implementing the partial design on a webpage, the next step was to get the partial product on the webpage for user testing and feedback. When talking with the site manager, a desire for some content matching and present-ability of the product was expressed, and included as the next step. Essentially the color scheme of the calendar interface was changed to match the mock ups of web pages under development. In addition to the color scheme, the design of the interface changed to match the specifications of the site manager; an information pane was moved to its own page and expanded to be more inclusive of all relevant information for each tournament.

Final Product

This calendar interface could be started without major community involvement was the calendar interface. This part of the application was intended from the beginning, and the calendar portion itself did not change much as it replaced the non-interactive listing of events on the Team Liquid site. Originally, the interface was designed to display a list of events, which users could select to show on the calendar, as well as show information about the tournament in a window below. Much of the interface remained the same, however after talking with the deployment site administrator, a different direction than the original design was taken.

4.2. Tournament List Management

Initial Idea

Early on, a method for managing the master list of events on the server was necessary. The graphical interface needed to be supported by list managing servlet. The list manager would hold a permanent copy of the list saved to a file on the hard disk of the location of the servlet. Originally this was facilitated by using file streaming of Java objects to the client applications. Unfortunately, while sending packaged java objects was much easier to code within both the server and client applications, sending complex Java objects over the Internet proved difficult and inconsistent. An input method was needed, but not planned out until after the list managing servlet was developed.

Process & Feedback

With the help of the site organizer and his development team, an XML document format was selected to maintain all of the information for each tournament event. The XML document was much easier to send from the servlet to the client applet, but required major changes to the list file and file processing in the client including the creation of XML nodes for each additional part of the tournament event Java object. Each node needed the data to be converted from object to a string of characters. In some cases there was no function defined for the accurate conversion of the objects to relevant string data. For example, the array objects would cast to strings containing descriptive labels rather than the data contained in the array. Occasionally there were issues with the list saving because of blank fields. As a temporary solution to this problem, the missing pieces of data were replaced with generic dummy data. The stream link, for example, was replaced by a URL object to the Google search engine. Overall, the internal server/host machine operations were fairly simple; the servlet took the XML file from the

editing console and loaded it into a Java object whenever it was initialized and saved any new copy it received immediately to the file. There may be eventual issues with multiple edits being created at the same time, where one edit may be completely lost if someone else begins editing while the console is open somewhere else. However this issue was deemed minor as access to the editing console would be limited to the development staff.

The other major difficulty was contained within the servlet-to-applet or server-to-client communication. This required more extensive research into the original operation of the servlets in general. The doGet() and doPost() functions allowed the "getting" and the "posting" of the tournament event Java objects that were loaded onto the Java run time by the servlet. HTTP communication proved more difficult than planned, especially when the applet and server were being run in their intended online environment in a web browser.

Initially, the list manager was a very basic component which would be behind the scenes, thereby not requiring a majority of community input. Given that the implementation needed to maintain the set of events and information, an online server module was used as the simplest solution. The feedback from the site development team helped guide the manager to use an XML file, which could be used by other portions of the site easily, and was much easier to send from the server to the client interface.

After this discussion with the site development team, it was also apparent that a system was needed to add, edit, and delete tournament events as necessary. A console application was developed to allow for such capabilities. The application loaded the current set of events stored in the XML file managed by the servlet into a table. This table could be edited cell by cell, however some of the information in the cells were large formatted strings of information. If entered or edited incorrectly, they could cause unexpected results or an applet crash. Editing windows were added to counteract this. The pop-up windows would provide specific fields, tables, and drop down menus to facilitate correct data to string encoding. While usage and navigation of this application has room for improvement, this is not an application intended for client use, and will have restricted distribution to the site admins. As such, the abilities and ease of use of this necessary piece of the project is a secondary concern.

Final Product

The list manager is a servlet hosted on a Glassfish server. Originally running on a local machine, it is designed to run behind a website with the ability to supply various tools with the Tournament Event information. Additionally, the manager maintained a static list file in XML format, which was to enable the rest of the site (coded in PHP) to have standardized access to the information. The servlet also managed the files for web deployment of the applet applications. However, this management was not strictly necessary, as the applets could be hosted anywhere with the proper jar resources and the internet location of the servlet communications.

Working with the servlet was one of the more difficult starting points, as the data transfer through the internet was an added layer of complexity. Hosting the applets as a web page was an additional complication. In order to have a Java application to load in a web browser, there are a lot of

security and dependency stipulations to acquiesce. First being, packing the source code into jars. Jar files are Java Archives, which allow a class, package, or project to be packed into one file. This file supports the deployment of applets on the web by providing the dependent source code. Understanding where these needed to go and how to link them through an html or php web page file was the first step to browser deployment.

4.3. Tournament Information Pages

Initial Idea

Additionally, there would need to be pages for each tournament containing all vital and relevant information. The distinction between vital and relevant information proved to be a dividing point between implemented features and future goals. The info pages would contain the name, run dates, stream link, as well as the tournament ladder or bracket. Some of the less complex or vital information included general tournament description or details, tournament organizers and sponsors, prize money, and casters. Initially much of this information was displayed in a panel in the same window as the calendar interface.

Process & Feedback

The info page for individual events proved to be more time consuming that originally thought. With the mock-up that the site manager provided, there was a very clear cut design to follow implement. However being able to use data in the Java object to tell the page how to operate was more complicated simply because of the player bracket or ladder formatting, which can be very variable from event to event. The page needed to be able to have a very deep configurability, and there was a lot of potential for error when graphically drawing the page. Originally when talking with the website development coders, a page based in php was desired, but due to the lack of experience, and the other portion already being coded in Java, it was decided that the project should continue in Java. Each info page would essentially have the title and start and end dates at the top, as well as a link to a stream if it was live and possibly VOD's (Videos on Demand) after the completion of games and matches. Below that was the generated tournament ladder. Tournaments can follow a wide variety of formats. The most common is basic bracket or ladder play, occasionally with a loser's bracket or a seeding mechanism. Some tournaments can have group play where each player will play every other in their respective group, and the highest scoring players will move onto another smaller group round or sometimes a simple playoff bracket. There are a few other tournament formats including combinations of formats, typically depending on how large the round is. For example, group play format will typically be for smaller rounds between 10 and 30 people simply because of the number of games that needs to be played will increase rapidly as more players are added to each group.

It is because of this complex and variable formatting that a large amount of time needed to be spent in both the Java Object formatting, XML file, and required graphical functions. In group play formatting the display is a fairly simple; the player's names and scores are reflected in a table with a "Group #" heading. In most cases the players would be ordered by score, highest to lowest, however the

applet resisted sorting the tables into any kind of order other than the order the players were originally entered. The bracket format, on the other hand, was more complex. On top of the differences between ladders with and without a loser's bracket, some ladders will seed-in players mid-bracket, forcing a shifted layout for the rest of the bracket. The team was only able to implement regular bracket format with add in options; this was facilitated with including specific information for each round with keywords. Using the strings "ADD" or "MERGE," the application is able to automatically determine whether to add players to the round, or simply merge as a regular bracket would. This subtle change to the regular tournament model causes the boxes to be placed at different locations, but because the location of the next round's boxes (which contain the player matchups and scores) are based on the location of the previous round's boxes there is not any issue with the subsequent box placement. This method could also be used to implement other formatting quirks and necessities in the future; simply add a case in the switch statement for the keywords and using the other placement constraints as a guide adjust the values to the desired location. For placement, there are a few static variables and panel functions that aid in placing it automatically within a specific area, after which it simply needs to be oriented in regards to the rest of the matchup boxes. Other eventual formats include finals bracket, which would have a few extra labels to denote in which round of the finals bracket players were, and extra placement boxes to clearly show which players won the top places.

Part of this graphics challenge was determining how the boxes and lines needed to be drawn in each case. The lines showed the progression of the winner in each matchup to the next round, and allows fans to clearly see the potential matchups of players before the tournament even begins once the first round of matches is set. Unfortunately, due to the variable form of each tournament ladder, a variable method of drawing each information page was needed. If there was a round where more players were being seeded into the ladder after some had already been removed, then the boxes would either not shrink in size or even grow, causing there to be a different spacing calculation than the original ladder. This box placement shift was very important to the way the boxes were drawn, however because the application was able to use the location of both the start and the end box, no more variability remained to be accounted for. All the application had to do was decide which matchup fed into the next one. While this could be very difficult and completely different tournament to tournament, some of the most common cases were considered as well as a configurability that should accommodate for most formats.

One of the final portions of the info page intended to be completed is the option of a simple textual description in a paragraph format underneath the ladder display. Basically this would simply allow for a non-graphics based representation to supplement the rest of the page and add information not strictly contained in the other fields. Given that information for many tournament events may be irrelevant or non-existent in others, a general description is the ideal way of delivering unforeseen data to the community. While there are some more vital fields which could be added, this initial application provides the necessary improvements conceptualized at the beginning of the project, and has much room to grow to fulfill the complete role as the primary E-Sports tournament tracking web application.

Specifics about the information pages separate from the calendar interface were also laid out in the same manner as the calendar interface changes. Given the quick and simple sketches the site

manager drafted, we shifted the interface around to meet his specifications. As there were going to be separate pages for each tournament, information would not necessarily need to be displayed in the same place as the event time line. Rather, a smaller general information window could be displayed on mouse-over, which would not be implemented immediately. Also, during discussion, the intent to deploy the application to the website for testing and feedback was examined, and while deployment was agreed upon, the default Java colors weren't going to cut it. So the client applet was updated to emulate the site's current color scheme, although emulating the actual visual style of the site was beyond the scope of this project.

As with the calendar interface, the information page should also follow the basic color scheme of the website. This would give the whole system a better sense of organization and unity. However this graphics process would take more time than it did for the calendar interface simply because of the increased complexity of the page, and increased number of graphical elements. If there had been enough time after a comprehensive completion point on information page features, the colorization would have been the next step to push the application out to the website for testing. Unfortunately, testing was not able to be fully realized in terms of getting the application to the community because of how time consuming the application became.

Before submitting the application to public testing, the information page was intended to be finished in order to test a fuller product. However, the final product features needed to get a full info page which is still incomplete, at least in comparison to the originally intended release product. In the end the feedback was retrieved from postings of screen captures of the application running on a local machine.

Final Product

Overall, the information page went through a lot of variation due to the major conceptual differences between our ideas and the development team's expectations. Additionally, the changes made to the information page sometimes affected the XML data structure, which required the list manager to be updated. The final information page included the name, run dates, players, tournament ladder, and general information. Adding additional information will typically not be overly difficult because it will be simple string display, whereas the tournament ladder was a very complex and modular display which had many details of which to keep track. These information pages in the future should be fairly simple to link to each other or to pages with player information.

4.4. Applet Signing and Compatibility

Problem

During local testing of the interface/servlet/list editor system, it became apparent that the accessibility of the browser-embedded portions. The interface applet threw a few warnings which could cause users to doubt the security and legitimacy of our application, greatly impeding general use by the community. The warnings concerned the unsigned nature of the resources, the warnings in the applet

code, and eventually a self-signed warning. Additionally, because the interface was written in the Java 7 API, it requires Java 7 to be installed on the client computer.

Solution

Fortunately, the Java JDK includes a signer for the jar files. These jar files are Java Archives, which contain all the necessary resources to run the browser application. These files are stored in a directory in the servlet, and are delivered to the client browser when requested. We were able to self-sign the jars, replacing the unsigned jar warning with the self-signed warning. In the future, it would be ideal to get the resources signed by a professional service, removing the warning entirely. Furthermore, the warning about code warnings could eventually be removed by replacing the offending code lines the appropriate functions. Given that these warnings did not impede the functionality test-usability of the application, more important features were pursued rather than spend time with trivial issues. Finally, the API issue is more difficult to solve, however the most straightforward solution would be to include a note and link to direct users to install Java 7.

5. Feedback on interface

Once we completed a first draft of the program several pictures were presented to the online StarCraft Reddit community for feedback. After having posted, there was very few feedback comments. Because Reddit shows popular and high traffic posts to users, it is possible the post did not make enough views to be seen by people who would feel inclined to comment. Alternatively, it is possible people did not want to comment because that would be more work than they wanted to do. This second method that was we used was to go to groups of students at WPI and ask them what they thought about the interface. The group of WPI students served to be a good group to ask, many of them play online video games and a good number also watched online Esports events. Showing them the program and asking their opinions gave us good data on things to potentially change.

The suggestion we saw the most from people pertained to the color scheme. In the current state of the app the color scheme was too high a contrast and too blue. This made the text hard to read for some people. Along with the comment about the color scheme the option of a color blind mode was given. This is a very good suggestion that should be taken advantage of to widen the range of users who would potentially use the program. People also felt that the app does not look polished enough to be its own program that would run on a computer. The audience felt that the color scheme and general polish of the app made it feel like more of a web integrated tool. Another graphical feature people seemed to feel would improve the overall look of the tracker would be to create a less square shape. This would entail making the text boxes and the buttons have rounded edges or even perhaps a 3D effect to create a more interesting user interface (UI). The last thing that people felt the program could benefit form is the inclusion of some dynamic elements. These are graphical and programming embellishments to create a UI that interacts with the user. For example having buttons change color when clicked. All of these features are something to think about and plan for in the future phases of this program.

6. Future work and conclusions

This portion of the report is focused on the final product and future work that needs to be implemented in the tracker. This includes a description of the future features, and the major outcomes of this project.

6.1. Further Features Future

Given the nature of the coding project, not every feature could ideally be implemented. The project needed to have complete features that would not be partially completed. One of the main issues the group ran into was how to effectively create the tournament brackets because they tend to vary greatly from tournament to tournament. The formats will sometimes follow a basic layout, but may have a few details changed. This small variation causes much bigger problems when they all need to be accounted for in the application. Many of the variations were accounted for in the current functionality of the regular ladder system. Additionally, group play formats were already simple to implement. This automatic configuration are therefore partially implemented, and could use further improvement and functionality. The way the data is stored also may not be the most intuitive or simplest way to do so; data input and storage could be improved.

In addition to changing the data input and storage, the ability to have users submit data like the Team Liquid site would be an excellent way of collecting information and gaining knowledge of new tournaments. This would require a whole new input location, where the data would need to be reviewed by an administrator and verified. The data could possibly be incomplete, requiring the administrators to find out about events and research them more extensively. Furthermore, being able to find sites of information on tournaments could allow for potentially automatically parsing individual data points to the necessary fields. This would save lots of time and effort, especially given the current input system is fairly arduous. An automatic parser would also help the site create and process the extensive archives that Team Liquid has on their site to allow the community to access the same wealth of information. An automated data system was way beyond the scope of this project though, as there would be a huge amount of algorithm processing and could very well stand as its own project. Overall, there is a lot of work that could be done on the behind the scenes data storage, processing and usage, but it does not directly affect the way the community uses the application, and it would affect the administrators much more. While this administrative side of the application is still important, it is less of the direct focus on the community idea put forth by the project.

Finally, the integration with other calendars such as Google Calendar and Microsoft's Outlook calendar is another great feature to offer the community. Exporting the event to those formats may be pretty straightforward, depending on the level of detail desired in each case, however it may also require a form of licensing. In addition to the roadblocks the group ran into, it was deemed to be a non-essential feature, which meant it was lower priority in the beta or alpha version being developed for the community. The data needed for each event export would be easily available, and could even be automated in the future when people get to follow tournaments to update their calendars without manual updating. In that same vein, the ability to track tournaments by adding them to an account to receive updates is also not a current feature, and my not even be integrated directly into the application

because the rest of the site is based in PHP. Rather the site will have personal user accounts and may use the data created by the list manager to link the XML documents with individual accounts. Given that an account system was not in the scope of this project, and it had yet to be implemented on the website, there was nothing that could be done in terms of the actual tracking ability, however calendar integration would not necessarily be dependent on the account system.

6.2. Major outcomes of project

Overall, we completed a basic initial version of the planned tournament tracking application, gained a better understanding of the E-sports community, learned the difficulties of working with long distance groups and the importance of specific deadlines, and the sluggishness of obtaining feedback from the Internet. We coded the tournament tracker in Java using servlets and applets to facilitate the passing of an XML database file from a server to the graphical client interface. The graphical interface went through a few iterations to meet the basic goals and desires of the community and website group to change the interface's accessibility and the look-and-feel. The package also included an administrator console to facilitate modification to the server-stored XML list of tournaments. In the end, our interface was only an initial rendition of the full concept as we were limited by time and coding ability.

Prior to and during the development of our interface we collected feedback from the E-sports community in the form of surveys and forum posts. Through this process we learned to collect and analyze data from a community such as that of E-sports. The collection of feedback information was more difficult that we initially expected, however we were able to direct our efforts at the most vital features desired by the community and determine what needed to be changed. In order to draw conclusions from our data, we learned some basic statistical tools which helped us interpret our data across multiple survey questions and across the community members who responded. One of the major pitfalls we encountered in gathering feedback was that the response rate for the surveys and forum posts were much lower than expected. Determining a more useful way to reach out to the community we work with is a consideration that we will take with us to future projects.

In addition to the products we produced, we interacted with both the community and the website group. We gathered initial ideas and feedback from the E-sports community in order to help the community grow and invite new members. The website group would be hosting our interface, and as such had a strong decision making ability when we discussed the direction, layout, and features of our interface. We made a small number of executive decisions including the code language, and the general servlet-to-applet layout. The website group desired us to store the list as an XML format in order to allow it to be easily accessed outside of the Java environment. The communication between us and the website group could have been more organized and more frequent, and it was a little difficult at times because all the communication utilized Skype rather than in person or email correspondence. We learned that, as with most projects, regular meetings with the website group, our advisor, and within our group, and milestone dates are very important to staying on-track and motivated.

7. Appendix

REDIT POST

StarCraft2

Hello all, I am a member of a group of students at the Worcester Polytechnic Institute and I am doing a project about StarCraft. Some of you might remember the survey we posted a couple months back. Thank you to everyone who submitted the survey! But now we are back with a first draft of an interface for the program. We would love nay feedback you can give. Here is a link to it.

[Image](http://i.imgur.com/iCDI5.png)

Aside from the bad color choice of font, can you guys think of any glaring faults in the design? Any criticism would be greatly appreciated!

Thanks!

How often do you play Starcraft?	How often do you watch Starcraft tournaments either through a streaming service or at the event?	Where do you get information about tournament viewing opportunites? Please list any that apply.	Would you use a tournament tracking application that has a graphical interface over the other current sources?	Would you want information on events other than the "big" events (such as MLG, or GSL hosted events or what can be found on the main Team Liquid events page)?	Which of the following features would be important/of interest to you in a tournament tracking tool with a graphic calendar interface? Check all that apply.	Are there any features not listed that you might like to see or would need in a tournament tracker?
A few times a month/occasionally	Occasionally	Friends	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	Links to tournament websites/streams
Multiple times a day/daily	Every weekend as long as there are free streams	Teamliquid.net	Yes	No	Tooltips displaying specific date tournament schedule information	
A few times a month/occasionally	Every weekend as long as there are free streams	Reddit/TL	No	No		

A few times a month/occasionally	Every weekend as long as there are free streams	Reddit, LiquidTV, Facebook, Word-of-Mouth	Yes	No	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A few times a month/occasionally	Occasionally	Friends	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
Multiple times a day/daily	Every weekend as long as there are free streams	team liquid	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
Multiple times a day/daily	Every weekend as long as there are free streams	reddit tl friends twitch	Yes	Yes	Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	

Multiple times a day/daily	Every weekend, and I pay for many of the pay-to-view streams	league and team websites	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Up-to-date information on tournaments	
Multiple times a day/daily	Occasionally	twitch tv	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Occasionally	reddit, youtube, ign.com/ipl, gom.tv, twitch.tv, TL.net	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	A visual representation of the tournament's flow. I have pretty much no idea how they decide who battles who and the whole single/double elimination just makes it more complicated to follow. if there were some sort of tree diagram (think the Dragonball series when they had tournaments) I would really find that helpful. Thank you for your hard work, GL HF!!!

A couple of times a week/weekly	Occasionally	r/starcraft	No	No	Ability to select which tournaments you want to track	email alerts when tournaments start
Multiple times a day/daily	Every weekend, and I pay for many of the pay-to-view streams	reddit, teamliquid	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
Multiple times a day/daily	Every weekend as long as there are free streams	Teamliquid.net	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	Bracket link (If Available)
A couple of times a week/weekly	Every weekend as long as there are free streams	teamliquid	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	make it a media player as well
A couple of times a week/weekly	Every weekend as long as there are free streams	TL, reddit	No	Yes	Up-to-date information on tournaments	who (specific people) are organizing, who will be there, who is paying for players to travel

A couple of times a week/weekly	Every weekend as long as there are free streams		Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Every weekend, and I pay for many of the pay-to-view streams	inside the game	No	Yes		don't feel we need a tracker
Multiple times a day/daily	Every weekend as long as there are free streams	Teamliquid.net, Liquipedia, Starcraft subreddit	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	No, I think the list of features are pretty solid.
A few times a month/occasionally	Every weekend as long as there are free streams	Teevox, Reddit	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information	

A few times a month/occasionally	Occasionally	Team Liquid website	No	No	Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Every weekend as long as there are free streams	teamliquid	No	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	give the ability to track players as well as tournament, always link to replay or VOD when available.
Multiple times a day/daily	Occasionally	TeamLiquid page, reddit.com, Facebook SC2 pages and groups.	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
Multiple times a day/daily	Every weekend as long as there are free streams	Team Liquid	Yes	Yes	Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Up-to-date information on tournaments	Most importantly I would love if there could exist a phone app such as this, and a way to track Players, and what upcoming tourneys they will play in.

Never	Every weekend, and I pay for many of the pay-to-view streams	teamliquid.com, r/starcraft	Yes	Yes	Up-to-date information on tournaments	tournament logo next to the tournament
Multiple times a day/daily	Every weekend as long as there are free streams	teamliquid.net	Yes	Yes	Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	Nope, what you have is great :)
Multiple times a day/daily	Occasionally	sc2sea.com, r/starcraft and TL.net	No	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	bracket links
Multiple times a day/daily	Every weekend, and I pay for many of the pay-to-view streams	Team Liquid, Twitter, Reddit, etc.	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	A release date, and a way to keep people posted on your progress, make a twitter or something, i have ALWAYS wanted something like this

Multiple times a day/daily	Every weekend as long as there are free streams	Reddit, Team liquid, GomTV	Yes	Yes	Tooltips displaying specific date tournament schedule information, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	Time zone Calculator!!
A couple of times a week/weekly	Occasionally	teamliquid.net	No	Yes	Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Every weekend, and I pay for many of the pay-to-view streams	Reddit, GOMTV, TeamLiquid, Barcrafts	No	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	Local time converter for international events, (x hours to event), set up alerts for events
A few times a month/occasionally	Every weekend, and I pay for many of the pay-to-view streams		Yes	No	Up-to-date information on tournaments	
Multiple times a day/daily	Every weekend, and I pay for many of the pay-to-view streams	team liquid	Yes	Yes	Ability to select which tournaments you want to track	when games are completed, links to VOD's if available

A few times a month/occasionally	Every weekend as long as there are free streams	reddit, Twitter, TeamLiquid	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Every weekend, and I pay for many of the pay-to-view streams	/r/starcraft	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	show and explain the brackets (see survival guides for events like MLG on /r/starcraft)
Multiple times a day/daily	Occasionally	team liquid reddit	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Up-to-date information on tournaments	
Never	Occasionally	Twitter and Reddit	No	No		

Multiple times a day/daily	Every weekend as long as there are free streams	Teamliquid mainly				
Multiple times a day/daily	Every weekend as long as there are free streams	Teamliquid mainly	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Ability to select which tournaments you want to track, Up-to-date information on tournaments	
Multiple times a day/daily	Every weekend as long as there are free streams	teamliquid.net	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A few times a month/occasionally	Every weekend as long as there are free streams	reddit, twitter, facebook, taketv.net	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	

Multiple times a day/daily	Every weekend as long as there are free streams	TeamLiquid.net, Reddit	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Every weekend as long as there are free streams	Reddit	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	Number of Streams and times in local
A couple of times a week/weekly	Every weekend as long as there are free streams	Twitch.tv or Casters/Players I follow on Twitter. Also Team Liquid.	No	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	

A few times a month/occasionally	Occasionally	reddit.com/r/starcraft	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Occasionally	teamliquid.net				
A couple of times a week/weekly	Occasionally	teamliquid.net	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free	
Multiple times a day/daily	Every weekend as long as there are free streams	Twitter and Reddit	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	League separation. Lets say I want to play in a silver only tournament, so if you could have a filter that would be awesome :D
Multiple times a day/daily	Every weekend, and I pay for many of the pay-to-view streams	teamliquid, reddit	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	

Multiple times a day/daily	Every weekend as long as there are free streams		Yes	Yes	Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Never/almost never	team liquid	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	VODS? saving tournies that i watch for later? or if i miss it, set to record?
A couple of times a week/weekly	Every weekend as long as there are free streams	Twitter, Reddit and Team Liquid.	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Every weekend as long as there are free streams	Teamliquid.net	Yes	No	Exporting event data to Google Calendar or other calendar application, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free	all info about next matches, i.e. i want to know all about the next matches in the OSL (date, map, records ...)

Never	Never/almost never	reddit	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	league of legends
A few times a month/occasionally	Every weekend as long as there are free streams	teamliquid.net	No	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
Never	Every weekend, and I pay for many of the pay-to-view streams	/r/starcraft	Yes	Yes	Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	more games
A few times a month/occasionally	Occasionally		Yes	Yes	Exporting event data to Google Calendar or other calendar application, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	

Multiple times a day/daily	Every weekend as long as there are free streams	Reddit	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A couple of times a week/weekly	Every weekend as long as there are free streams	reddit	Yes	No	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
Never	Every weekend, and I pay for many of the pay-to-view streams	reddit	Yes	Yes	Up-to-date information on tournaments	
Never	Every weekend as long as there are free streams	Team Liquid, Facebook	Yes	Yes	Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	

A couple of times a week/weekly	Occasionally	teamliquid.net	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
A few times a month/occasionally	Occasionally	Reddit.com, Twitter	No	No	Exporting event data to Google Calendar or other calendar application, Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	
Multiple times a day/daily	Every weekend as long as there are free streams	Twitter, Reddit, team liquid	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	

Multiple times a day/daily	Every weekend as long as there are free streams	casters talking/tweeting about it, twitch.tv, teamliquid.net	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free	Ability to see a specific player's profile and which tournaments he is attending
Multiple times a day/daily	Every weekend as long as there are free streams	Day9.tv, www.teamliquid.net, friends	Yes	Yes	Exporting event data to Google Calendar or other calendar application, Ability to select which tournaments you want to track, Ability to add/request an unlisted tournament to be tracked, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	must be web based, not a stand alone program or app.
A couple of times a week/weekly	Occasionally	teamliquid	Yes	Yes	Tooltips displaying specific date tournament schedule information, Ability to select which tournaments you want to track, Tagging tournaments for pay-to-view vs. free, Up-to-date information on tournaments	

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