**ARENA Problem Statement**

**1. Problem**

The popularity of the Internet and the World Wide Web has enabled the creation of a variety of virtual communities, groups of people sharing common interests, but who have never met each other in person. Such virtual communities can be short lived (e.g., a group of people meeting in a chat room or playing a tournament) or long lived (e.g., subscribers to a mailing list). They can include a small group of people or many thousands.

Many multi-player computer games now include support for the virtual communities that are players of the given game. Players can receive news about game upgrades, new game maps and characters; they can announce and organize matches, compare scores and exchange tips. The game company takes advantage of this infrastructure to generate revenue or to advertise its products.

Currently, however, each game company develops such community support in each individual game. Each company uses a different infrastructure, different concepts, and provides different levels of support. This redundancy and inconsistency results in many disadvantages, including a learning curve for players when joining each new community, for game companies who need to develop the support from scratch, and for advertisers who need to contact each individual community separately. Moreover, this solution does not provide much opportunity for cross-fertilization among different communities.

**2. Objectives**

The objectives of the ARENA project are to:

* provide an infrastructure for operating an arena, including registering new games and players, organizing tournaments, and keeping track of the players scores.
* provide a framework for league owners to customize the number and sequence of matches and the accumulation of expert rating points.
* provide a framework for game developers for developing new games, or for adapting existing games into the ARENA framework.
* provide an infrastructure for advertisers.
* provide a network enabled game that utilizes the ARENA framework and provides potential game makers with an example of ARENA’s different features.

**Functional requirements**

ARENA supports five types of users:

* The *operator* should be able to define new games, define new tournament styles (e.g., knock-out tournaments, championships, best of series), define new expert rating formulas, define advertisement schemes, and manage users.
* *League owners* should be able to define a new league, organize and announce new tournaments within a league, conduct a tournament, and declare a winner.
* *Players* should be able to apply for a league, sign up for a tournament, play the matches that are assigned to the player, and drop out of a tournament/league.
* *Spectators* should be able to monitor any match in progress and check scores and statistics of past matches and players. Spectators do not need to register in a tournament/league to be able to spectate.
* The *advertiser* should be able to upload new advertisements, select an advertisement scheme (e.g., tournament sponsor, league sponsor), check balance due, and cancel advertisements.