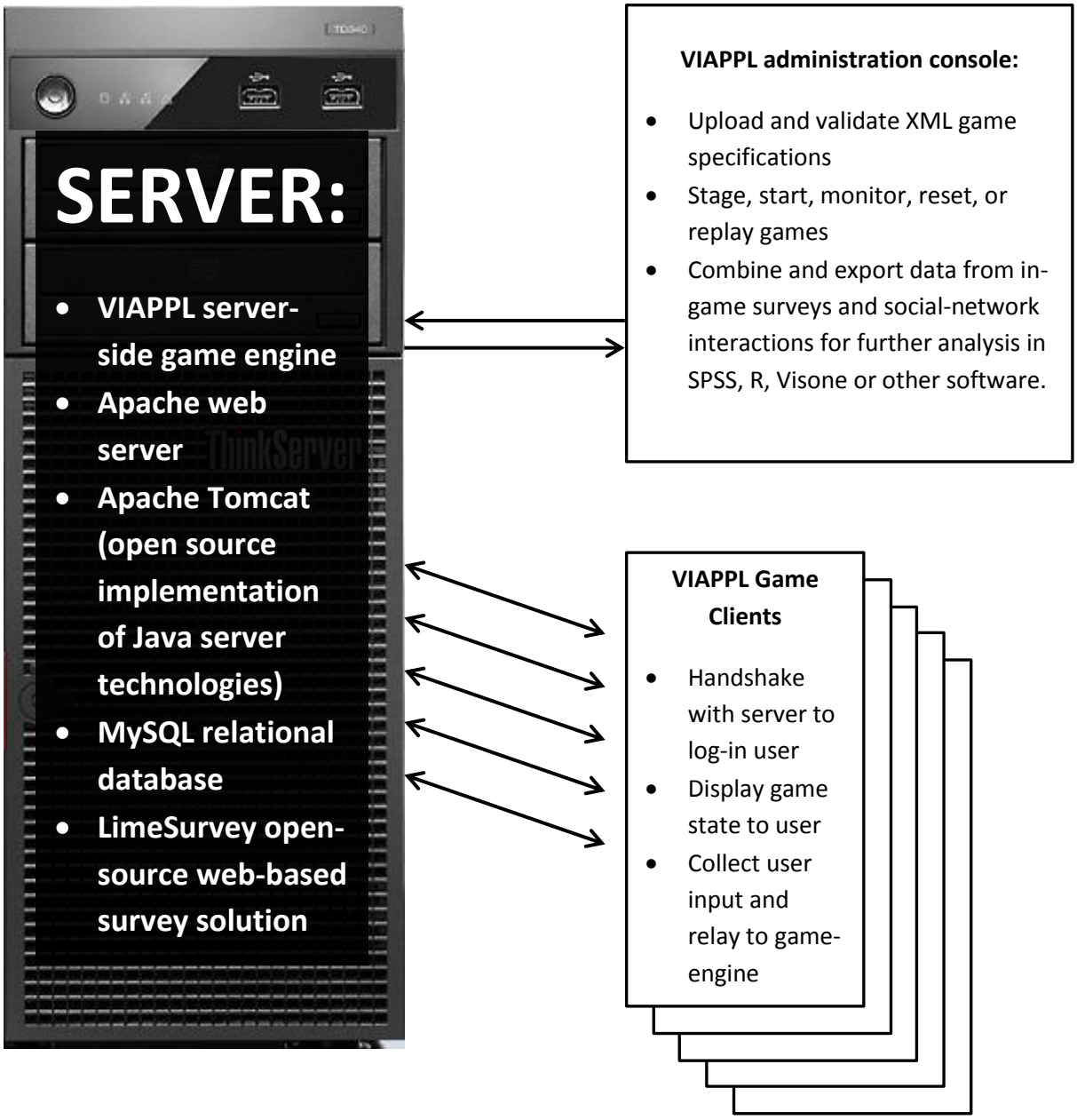
The Virtual Interaction APPLication (VIAPPL) architecture



The VIAPPL platform employs server-client architecture and has three key software components: the server-side game engine and survey system; the java-based administration console; and the java-based game-client.

Server-side game engine: The server-side game engine has been built on open-source scaleable technologies and can easily be deployed on a standard web-hosting server. It relies on the open-source Apache web-server, Apache Tomcat implementation of java server-side technologies, the MySQL relational database platform, the LimeSurvey open source web-survey platform and the custom VIAPPL server-side game engine, written in Java.

These survey technologies are open-source, free, robust and scaleable. The VIAPPL system can therefore be installed on local servers, on hosted web servers, or on infinitely scaleable cloud-computing infrastructure such as Amazon AWS.

The VIAPPL game engine has been designed from the ground-up to be scaleable. It can stage and run multiple games from multiple sites concurrently, and stores detailed game data (including timestamped interaction data) in a MySQL database. Currently game actions are limited to transferring 'tokens' from player to player, but future implementations will allow additional actions such as moving within the game arena, and messaging other players.

The game engine allows information of various kinds to be displayed to players at different points in a game, integrates with LimeSurvey to allow questionnaires to be completed at many points, and records players' interactions in the virtual arena during the course of a game. Games can have several rounds, with different primes or information given at the start of each round, and questionnaires presented at various points to track the effects of experimental manipulations or participant interaction.

VIAPPL Administration console: The VIAPPL administration console can run on the server, or from any computer with network access to the server. The console allows full administrative control of the server-side game engine, including validating and uploading XML game definitions, staging, starting, resetting or replaying games, or exporting survey and interaction data for analysis by statistical packages such as SPSS or R. All game data is stored permanently in the MySQL database and can be extracted at any time using the VIAPPL administration console. The administration console is written in Java.

VIAPPL Game Clients: Each player accesses the game using a VIAPPL game client running on their workstation. The game client, like the other VIAPPL components, is written in Java for maximum cross-platform compatibility but is currently only tested on Windows PC's. The client handles the login process and displays game-state information to the user using a graphical game interface. Surveys are completed using a standard web-browser to interface with Limesurvey, running as a web-application on the Apache web-server. All data from surveys and VIAPPL game-events are stored in the same MySQL database.