

# Modular Architecture for Computer Game Design

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## Abstract

Common current game architectures limit program flexibility and modularity. With the advent of middleware and the increasing complexity of games, this is no longer acceptable. In this project I will attempt to design and implement a highly modular, Data-centered architecture based on the "System of Systems" approach. The final implementation need not have any significant complexity within each system (e.g. graphics, AI, etc.) but rather must demonstrate the successful interaction of independent systems.

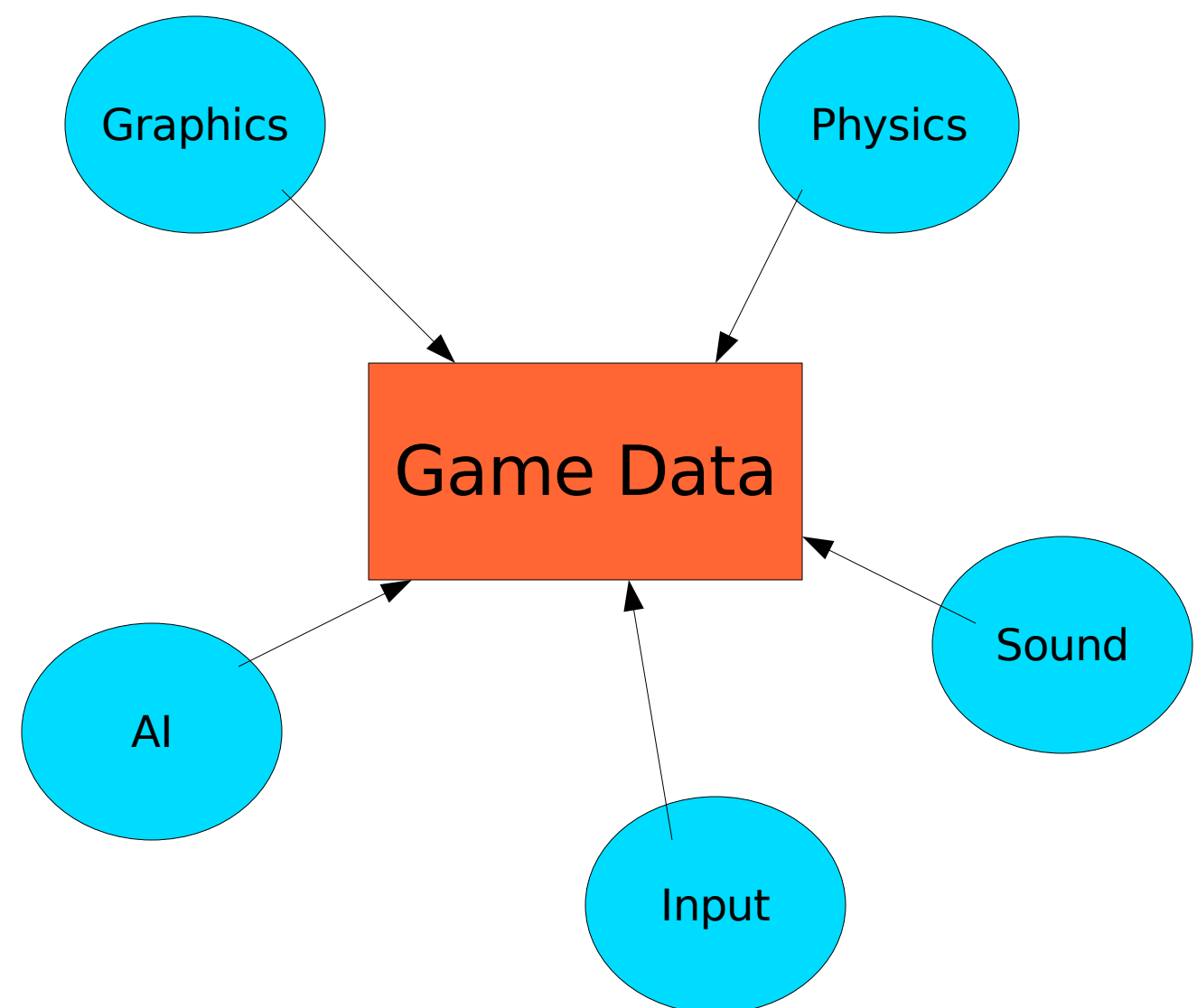


Figure 1: The System-of-Systems design model. Each system is as independent as possible from the others, and each operates on a central set of game data.

## Expected Results

This project involves both an adequate design and a complete implementation of a game. The design is based on the research presented by Jeff Plummer in "A Flexible and Expandable Architecture for Computer Games" and requires the implementation of several independent systems that a game requires.

The final implementation requires that each of these systems is present, modular, and interacting to form a working game. It does not require any level of complexity within each system. For example, the graphics system could involve only cubes, the sound system could only use beeps, etc. The proof of concept in this project lies not within the systems themselves but rather in their interaction.

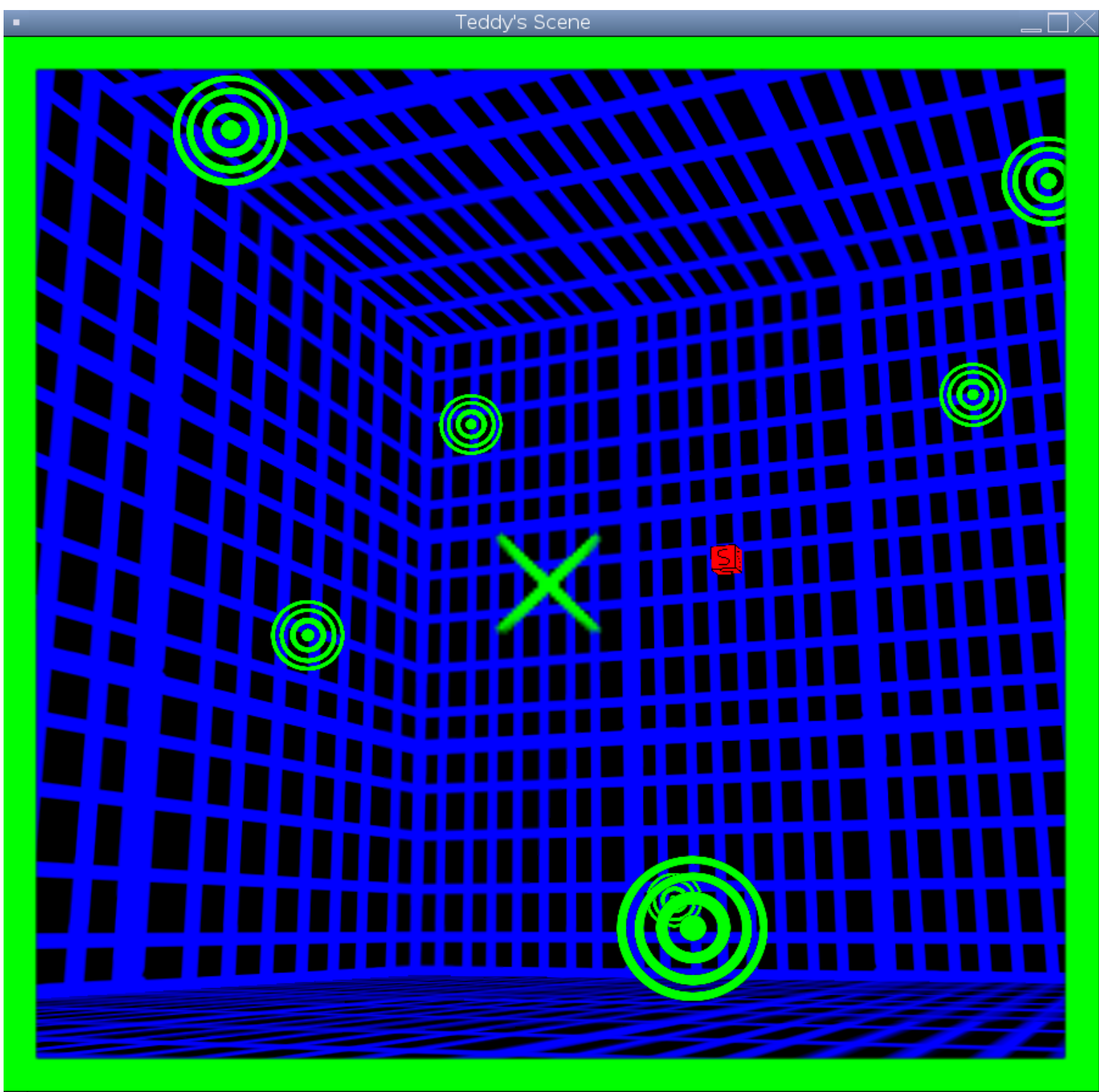


Figure 2: A screenshot from the current game prototype. The targets are billboarded quads (squares that always turn to face the camera) with partially transparent textures mapped to them. A projectile is shown in red.