iCreate: Software Requirements

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I. INTRODUCTION

A. Purpose

The Purpose of this document is to provide a detailed description of the iCreate virtual reality (VR) application. It will illustrate the functions and features of the system. Additionally, it will explain the interface and system constraints. This document is intended to be proposed to Raffaele de Amicis for its approval and a reference for developing the first version of the system for the development team.

B. Scope

The iCreate software is a virtual reality application that allows users to construct complex architectural designs in VR using simple sketches, gestures, and parameters defined by the user. The application will be available to download for systems that can support VR headsets.

VR users can provide parameters for a base 3D object that will be used to build the user's complex design. This can be done either by manually providing the parameters, or simply by creating the base object via gestures or virtual sketches. Moreover, both the base objects and the complex designs can be saved for quick access in the future.

Furthermore, the software will need a computer that is capable of running virtual reality applications. The application will also use the proprietary VR software for the respective headset being used.

C. Glossary

Table I
TERMS AND DEFINITIONS

Terms	Definitions
VR	Virtual Reality
User	Someone who interacts with the iCreate virtual reality application.
3D	3-dimensional
Parameters	The measurements for objects defined by the user.
Input	Stimulus provided by user.
Output	Feedback from the software based on the user's input.
Virtual Space	A 3D area in virtual reality in which the user can move around and interact with objects.
GPU	Graphics processing unit responsible for quick handling and rendering graphics on a computer.
Generative Design	A form finding process that mimics nature's evolutionary approach to design.

II. Overall Description

A. Product Perspective

The VR application will utilize a virtual reality headset with input from the user via a controller or gesture recognition software. The VR headset will be used to look around in virtual space while the controllers or gesture recognition software will be used by the user to draw sketches.

The VR application will need to utilize the GPU in a computer to both run the VR application and render 3D objects in the virtual space. Additionally, the scene modeling will be based on generative design techniques, and the assembly of the complex 3D designs will utilize mathematical equations and algorithms to derive the appropriate structure of the design.