**Research Report**

**Sketchfab’s 3D Model Viewer:** Sketchfab is a platform for publishing, sharing, and discovering 3D content. Their 3D model viewer allows users to explore detailed 3D models directly within their web browser. While navigating the 3D space around the model, users can interact with various 2D elements overlaid on the screen. These include controls for rotating, zooming, and panning the model, as well as options for changing rendering settings and viewing annotations. By combining 2D interactivity with the 3D model, Sketchfab provides an intuitive browsing experience for exploring 3D content on the web.

**IKEA Place App:** IKEA Place is an augmented reality application developed by IKEA that allows users to visualize how furniture and home décor items would look in their living spaces. Users can select products from IKEA's catalog and place them within their surroundings using their smartphone or tablet camera. While the AR experience is primarily 3D, IKEA Place incorporates 2D interactivity through its product selection menu and configuration options. Users can browse a 2D catalog, filter products by category, and adjust item properties such as color and size. This combination of 2D interface elements with real-world 3D visualization enhances the shopping experience and helps users make informed purchasing decisions

**Tilt Brush by Google:** Tilt Brush is a virtual reality app developed by Google that allows users to paint in 3D space with virtual reality. While primarily a 3D experience, Tilt Brush incorporates 2D interactivity in several ways. Users can select colors, brushes, and other tools through a 2D interface that floats within the 3D space around them. Additionally, they can manipulate the canvas by using a 2D palette that enables them to adjust brush size, opacity, and other parameters. This combination of 2D interactivity within a 3D environment offers users intuitive control over their creations.

**Minecraft:** Mojang's sandbox game, Minecraft, offers players a vast procedurally generated world to explore and build in 3D. While players interact with the environment and construct structures in three dimensions, the game features several 2D interfaces for crafting, inventory management, and navigation. These interfaces include the crafting menu, inventory grid, and map overlay, providing players with essential tools for crafting items, storing resources, and navigating the world. The integration of 2D interactivity enhances gameplay accessibility and facilitates complex crafting and building mechanics within the expansive 3D world of Minecraft.