PrismArch

Virtual reality aided design blending cross-disciplinary aspects of architecture in a multi-simulation environment

At a glance:

Employing virtual reality for the collaborative manipulation of architectural designs

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The main objective of PrismArch is to achieve a "prismatic blend" between aesthetics, simulation models and meta-information that can be presented in a contextualized and comprehensive manner in Virtual Reality (VR) in order to allow collaborative manipulation of the design and accurate assessment of new design decisions.
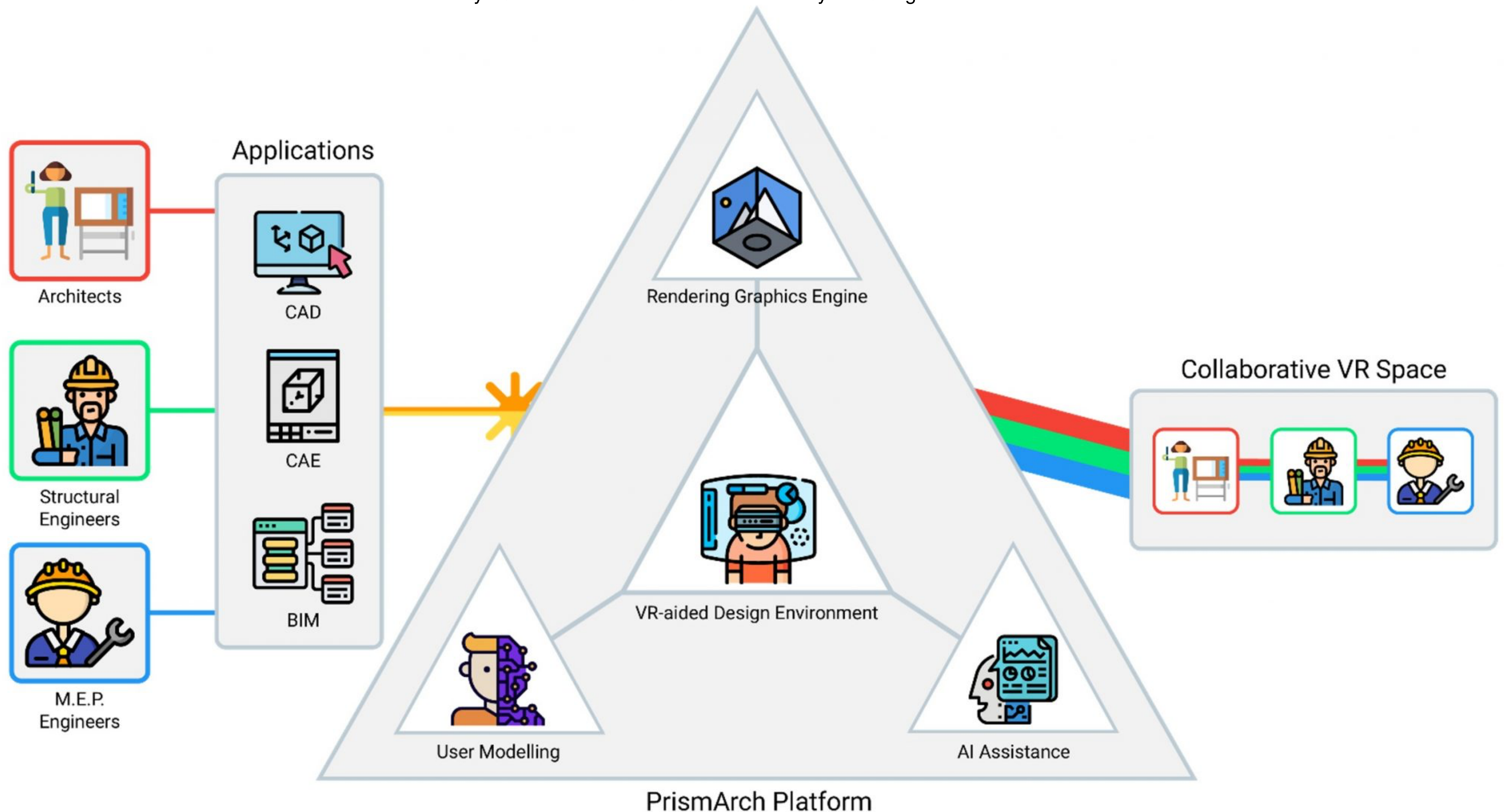
Objectives:

• Requirements of a cross-disciplinary, collaborative environment for VR-aided design in architecture

• Computational architecture design for automated content creation and design suggestions

• Cognition aspects of collaborative VR-aided design environments

• Blending multi-simulations and BIM notations within a VR-aided design environment

• System integration and development of the collaborative VR-aided design environment

• Demonstrate and evaluate PrismArch in different architectural projects

Use Cases:

The User oriented Objective (UO) targets for the definition of a) two architectural projects (demonstration use cases) that will be designed using the PrismArch platform; b) the usage scenario for the demonstration and evaluation of the PrismArch platform; and c) a methodology to evaluate the platform. Finally, this UO concerns the smooth execution of the evaluation process.

Outcome:

The main idea of PrismArch is to create a VR-aided design environment for the AEC industry that will enhance the collaborative capabilities across its main disciplines (architecture, structural engineering and MEP). It is the need for a "prismatic" decomposition of AEC projects that will allow each of AEC professionals to perceive and understand how their decisions affect the other AEC disciplines and consequently the project in total. In order to achieve this ultimate goal that aims to disrupt the AEC industry with VR, PrismArch will take advantage of well established technological advancements. By bridging the gap among a wide variety of domains such as computer graphics, machine learning, computational physics and cognitive science, and integrating them into a common workspace, PrismArch will develop a layered multi-simulation virtual environment, enhanced with AI-assistive capabilities, that meets the complex needs of each of the AEC professionals both independently and simultaneously, allowing a multi-designer presence and complex visualizations in VR that are missing currently from the AEC workflow in VR and they are of high need.

Partners