

Vision Document

IPFW Senior Design team 5
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Revision History

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- *Definitions, Acronyms and Abbreviations*

Throughout this text, the following abbreviations/acronyms may be used:

“VR” – Virtual Reality: A composition of sensory stimulation produced digitally with the goal of immersing a user in a virtual environment.

“SDK” – Source Development Kit: A collection of tools and resources created (publicly or privately) to aid developers in implementation of features provided by hardware or software product vendors.

“IPFW” – Indiana University/Purdue University Fort Wayne: The educational institution providing the funding, facilities, and related resources to this project and other stakeholders.

- *Preface*

Virtual reality has been a hot topic for decades, but it has now become widely accessible to consumers and the development community. The technology and tools have evolved to a point where small teams of software engineers and visual artists can collaborate to produce significantly immersive experiences, without the need to adopt highly-specialized design and implementation techniques. In light of these advancements, the IPFW Senior Design Team #5 is researching what virtual reality currently has to offer software engineers, and will utilize public source development kits to gain experience compiling and deploying applications to VR platforms.

- *Document Overview*

This document is intended to give a general outline of the considerations involved in this team project, and will be regularly updated to include changes in plan or direction.

The following sections will provide reference for the design team and the project stakeholders to maintain a common vision of the project scope and expectations. As a unique project with grounds in both research and application development, the emphasis on one or the other may shift throughout the design phase. Thus far, the team has found substantial documentation to support the technical requirements of the project, making it more feasible to begin application design and implementation.

- *Vision Statement*

The VR genre is poised to become the next disruptive technology to digital industries, therefore research into mechanics and design techniques is currently yielding highly relevant results. For this reason, a team of students is working to collect and organize data on an expanding range of programs, features of interaction, and thematic elements. This data will be stored in a relational database, and used to drive decisions during implementation of one or more prototype applications. With a budding variety of genres and mechanics already developed, review of existing implementations will yield great insight for creative direction and use of technology.

- *Stakeholder and User Summary*

Stakeholders for this project include students and faculty of IPFW and, prospectively, another external educational entity (museum).

The students and faculty of the ETCS department of IPFW, and to a lesser degree the Visual Communication and Design department, are the primary stakeholders for this project. The quality of work observed during the course of this project will directly reflect on the university. Therefore, the following considerations shall be observed to protect the institution's interests:

- Maintain a high quality of work in research and demo presentation.
- Exhibit organized methodology in collecting and analyzing research data.
- Reflect an exemplary level of ethical behavior in communication style and equipment handling.

To protect any external educational entity's interests, the following additional considerations shall be observed:

- Provide constant communication of updates to project plan, requirements, etc.
- Observe sensitivity to cultural and racial issues throughout requirements gathering and implementation phases.
- Fully-communicate project scope, including design limitations and feasibility of requested requirements.

- *Operating Environment*

The required research environment includes regular access to a lab room for collaboration, testing, and implementation tasks. A closed room is preferred, located away from public areas and noise. Access to wireless internet for research/downloading/sharing of files to source control is required throughout all phases of the project. Access to a PC with graphical capabilities to support the HTC Vive/Oculus Rift hardware is also recommended.

The primary operating environment for a VR user consists of at least 6' x 6' of clear standing/sitting space. Depending on the determined implementation requirements, image printing and larger open space may also be required.

A final exhibition environment shall consist of at least an 8' x 8' space, completely clear of obstructions. An attendant to prepare and operate hardware for end users shall be present at all times to ensure comfort and safety. Sanitizer, wipes and drying cloth will be required at any exhibitions.

Technical Risks

Risk Description	Proposed Solution
Limited access to VR hardware/software.	Shift focus from research to application development accordingly.
Development team skill and knowledge requirements.	Shift focus from application development to research accordingly.
Limited access to common research/testing laboratory environment.	Assign tasks to team members to be performed individually.