

Paragraphs

Explain pairwise chart of importance weight

Pairwise Comparison								
	1	2	3	4	5	6	7	Total
1. User-friendly	-	1	0	1	1	1	0	4
2. Adaptable	0	-	0	0	1	0	0	1
3. Finished Product	1	1	-	0	1	0	0	3
4. Unreal Engine	0	1	1	-	0	1	0	3
5. Seamless connection	0	0	0	1	-	1	0	2
6. Feature integration	0	1	1	0	0	-	0	2
7. Camera Functions	1	1	1	1	1	1	-	5
Total	2	5	3	3	4	4	0	n-1= 6

Before the House of Quality (HOQ) could be started, we had to figure out what the customer requirements were. We took a look at our customer needs along with some of the engineering characteristics of the project. Next we had to determine the importance of each of the customer requirements. A pairwise comparison table was used for the importance factor weights. To keep all of our totals in the 1 through 5 scale range, we had to take the “camera functions” customer requirement down by one to make its final total 5. Once we finished the table, our results showed that “camera functions” was the most important requirement and that “adaptable” was the least important requirement.

Explanation of House of Quality chart

	Engineering Characteristics							
Improvement Direction								
Units	ms	lb	ratio	n/a	n/a		ft	n/a

Customer Requirements	Importance Weight Factor	Low Latency	Weight	3D Mapping	Transportability	Visualization of rendered scene	Motion Sense	Range of communication	Component assimilation
User-friendly	4	3	9		3	1	3	3	3
Adaptable	1		3	1	1			1	3
Finished Product	3	3	9	3		9	9		3
Unreal Engine	3	1		3		9	3	3	9
Seamless connection	2	9		1		3		3	
Feature integration	2	1		1		3	3		9
Camera Functions	5	3		3	3	9	3	3	9
Raw Score(538)		59	66	74	28	85	69	43	114
Relative Weight %		10.97	12.27	13.75	5.20	15.80	12.83	7.99	21.19
Rank Order		6	5	3	8	2	4	7	1

To ensure that our team focuses on the essentials starting out, we must create a House of Quality. From talking to our customers and users we have identified and ranked the top essential characteristics and requirements our product must have. Upon viewing the chart above, it is apparent that the most essential engineering characteristic is the “component assimilation”, which means that all aspects of our design ranging from the buttons to the unreal engine software must be able to communicate seamlessly with one another. Following this characteristic are “Visualization of rendered scene”. “3-D Mapping”, and “Motion Sense”, among others. In total, the combined characteristics give our team a roadmap of which requirements are the most important.

Explanation of first pugh chart

Selection Criteria	PC Film Animation Platform	Concepts						
		1	2	3	4	5	6	7
Low Latency	Datum	-	-	-	-	-	-	-
Weight		+	+	+	+	+	+	-
3D Mapping		S	S	S	S	S	+	+
Transportability		+	+	+	+	-	-	-
Visualization of scene		S	S	S	S	+	-	-
Motion Sense		+	+	+	+	+	+	+
Range of Communication		+	+	+	+	-	+	+
Component assimilation		S	S	S	-	-	-	-
# of pluses		4	4	4	4	3	4	3
# of minuses		1	1	1	2	4	4	5

For our initial pugh chart, we decided to use the PC Film Animation Platform as our datum. We used the results from the house of quality to create the selection criteria. Each of our concepts were compared to the datum point to see how they would compare. Our 7 concepts were as follows:

1. Side-gripped system with a combination of controls accessed through hardware and software.
2. Underhanded control system with a combination of controls accessed through hardware and software.
3. System mounted to the body with the majority of controls accessed through hardware widget panel.
4. Glove controlled system: Similar to high fidelity idea number 1, the controls would be on a system integrated with an iPad where the majority of controls are accessed through a motion sensor glove.
5. Scope system: Similar to high fidelity concept 3 and includes a scope to view the generated space and controlled through a control panel strapped to the body.
6. VR Headset with tactile controls: The user would be able to see the 3D generated space through the use of a VR headset and controlled through a tactile controller similar to a game controller, specified to include camera functions
7. VR headset with body controls: The user would be able to see the 3D generated space through the use of a VR headset and controlled through sensors placed on the arms and legs of the user.

Once the comparisons were done, concept 1 became our new datum point. We once again compared the new datum point to the other concepts that were selected to go move on in the process. After this comparison, concepts 3 and 5 were determined to be the top two.

Explanation of second pugh chart

Selection Criteria	Concepts					
	1	2	3	4	5	6
Low Latency	Datum	S	S	S	S	S
Weight		-	-	+	+	-
3D Mapping		S	S	S	S	S
Transportability		S	S	S	S	-
Visualization of scene		S	S	S	-	-
Motion Sense		-	S	-	S	+
Range of Communication		S	S	S	S	S
Component assimilation		-	S	-	-	-
# of pluses		0	0	1	1	1
# of minuses		3	1	2	2	4

Explanation of AHP