

GNG1103
Engineering Design

Deliverable C

Date: February 3,2020

Team #: F08

**Team Partners: Abdulla Albannai 300094358, Sofia Portela Granados
8846626, Kelly Shigeishi, Duncan Sheridan 300132531**

Functional Requirements

- User-friendly
- Compatible with students' computers
- Easy access
- Reliability
- Engaging (concise)

Non Functional Requirements

- licensed under Creative Commons
- Aesthetics
- Effectively convey/display the game's functionality to judges through a demonstration of its purpose
- Must stand out among the crowd of different presentations.

Constraints

- The game should not have advanced information about chemistry.

In order to benchmark using design criteria deemed essential for this project, we compared two possible projects on the basis of their technical specifications in order to determine a target range of specifications.

Benchmark Specifications:

Specifications	Project Name: VR Chemistry	
	Odyssey	MolView
Company	Wavefunction Inc.	AGPL Freesoftware
Cost (CAD)	\$329-3286 (depending on version and intended user(s))	Free
Program Size	800 MB	No Program size available because it is browser
Assessment	Yes, interactive test and applies concepts through quizzes	No interactive way of accessing
Operating System	Windows 7.1 or newer Mac OS 10.10 or newer	Windows 7.1 or newer Mac Os 10.10 or newer
RAM	2 GB	N/A
Processor	2 GHz Intel or AMD	N/A
Model Style	Space filling, ball and stick, electron cloud	2-D, ball and stick, space-filling, stick, Vander-Waals
Tutorial	Online	PDF Manual
Number of samples	>1000	Access to various databases e.g. pubchem. Chem doodle,spectroscopy

Order Of Most Important Specifications:

1. Model style
2. Cost
3. Assessments
4. Operating System

The chief purpose of the software is to aid in the visualization of molecules and thus the molecules need to be represented in a clear, unambiguous way that both represents them realistically and avoids undue confusion. Presenting the molecules in diverse different ways is an important way to realize this goal. It thus seems just to consider the style of the models as the most important feature. The finished product is intended to be licensed under Creative Commons licensing and as a result it is to be free. Therefore cost may be considered a very important factor in the design; additionally, as there is a limited development budget of only \$100 low cost is very important. The role of the product also presents an interesting criterion: because the software is to fill an educational role it is important that it includes well-defined and clearly conveyed goals to assess the learning of the user. Without such a feature, it is impossible to ascertain the merit of the program or the achievement of the student. Of lesser, though still significant, importance is the ability of the software to run on a variety of operating systems and machines because accessibility is a major goal of the client. To accomplish this, the program size and resource use are best minimised. Lastly, it goes almost without saying that the scientific accuracy of the content and representations is of paramount importance.

Benchmarking Specifications Ratings

Colour	Red	Green
	Worst = 1	Best = 2

Specifications	Importance	Program name	
		Odyssey	Molview
Cost (CAD)	4	\$329-3286 (depending on the version and intended user(s))	Free
Model Style	5	Space filling, ball and stick, electron cloud	2-D, ball and stick, space filling, stick, vander- waals
Assessments	3	Yes, interactive test and applies concepts through quizzes	No interactive way of accessing
Operating System	2	Windows 7.1 or newer Mac OS 10.10 or newer	Windows 7.1 or newer Mac OS 10.10 or newer
Total		19	25

From the following metrics and target specifications, we can observe that Molview has a higher total score of 25. Both Odyssey and Molview have pros as well as cons, but Molview has a better model style than Odyssey. However, Odyssey is more interactive and better at assessing concepts or learning objectives.