Project Proposal

1. Project Team

1.1 Company Name

Pagoda Software

1.2 Team Members (in alphabetical order)

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2. The Project

2.1 Project Description

The best way to learn something is exercising or trying it. Gaining experience and observing how an action stimulates a process is the sole key to learn how a process works. But we do not have the chance or economic opportunities to try and experience every process we are willing to learn. For example, in schools we learn everything from the books and represent them as formulas, but when it comes to see those formulas at work, economic constraints hinder us from observing these formulas becoming realities; or think of pilots which will carry hundreds of people in an airplane, if he/she is not prepared to every emergency that can occur throughout the flight everybody's life will be in danger, can a pilot be trained with a real plane safely and economically; there are many of these examples which we face in every day's life. So, as we don't have the possibility to learn or teach everything with real life experience, there is only one possibility left to learn or teach by experience; "simulating the reality".

Today's highly advancing technology and powerful computers enable us to simulate almost every situation that can occur in real life. With the aid of very advanced graphics cards, computers can render very high quality, "almost like real", images. Under these circumstances, a computer simulation is a very convenient way to make people, especially children, experienced and knowledgeable about a concept or ability.

Our project is to achieve this most convenient way to educate people. We will try to make an almost real simulation of a concept and educate people by experiencing the reality. The simulation should be designed in such a way that user must forget that it is a simulation of reality and feel that it is indeed the reality itself.

2.2 Market Research

There are lots of 3D education tool software available on the market. We have found many physical simulation tools which can be useful for high school students to make simple experiments, also there are chemical reaction simulators which can be very useful for students to experience chemical reaction formulas. Also there is an education tool called "The Whole Frog Project", the project is described in the website as: "The goal of the Whole Frog Project is to provide high school biology classes the ability to explore the anatomy of a frog by using data from high resolution MRI imaging and from mechanical sectioning, together with 3D surface and volume rendering software to visualize the anatomical structures of the intact animal". (An example image is in the Appendix A. figure-1.) Similar to this program is a project called 3D-HuBEd where you can see parts of the body on action from any angle you choose. But as this

program works on Silicon Graphics workstation we won't have the chance to use it.

Also there are lots of astrological education tools, one of them is NASA's Virtual Astronaut which is a tool for students to experience the interior of a spacecraft and the "virtual astronauts" also make experiments about human biology, plant biology, physical sciences, geography and some other experiments. (A screenshot is in the Appendix A. figure-2.)

There is also a solar system simulator where you can make intergalactic trips in seconds and observe the planets and follow their orbits. The program is called Celestia. (A screenshot is in the Appendix A. figure-3.)

One last interesting example is a game to train called "The Monkey Wrench Conspiracy". The game puts you in the role of an intergalactic secret agent dispatched to deep space to rescue the Copernicus station from alien hijackers. It is a complete tutorial for a complex technical product, designed to teach industrial engineers how to use new 3-D design software. To succeed in the game, you must design everything you need for the job, starting with a simple trigger for your gun. Along the way there are spacewalks, bad guys and booby traps. This is indeed a very interesting idea to teach adults very technical concepts.

2.3 Possible Approaches

There are lots of areas where we can build an education simulation. Our choices are;

- A physical and chemical lab for high school students where they can make experiments in different environments, even in different planets. But this program must be highly interactive and enjoyable.

There can be puzzles where the student has to combine different concepts to solve it.

- An education tool for people who are willing to try paragliding. The simulation will have to simulate the behavior of the kite and will simulate emergency cases. Also different sceneries can be chosen to make it more enjoyable.
- A biological human body simulation. In this model the user will be in a fantastic craft which can travel in the human body. The user will travel to different parts of the body and observe how they work. And also the user can be assigned objectives, for example fighting against a virus with blood cells or keeping the body in good nutrition to avoid illnesses.

Appendix A

Figure.1 – A screenshot from “The Whole Frog Project”

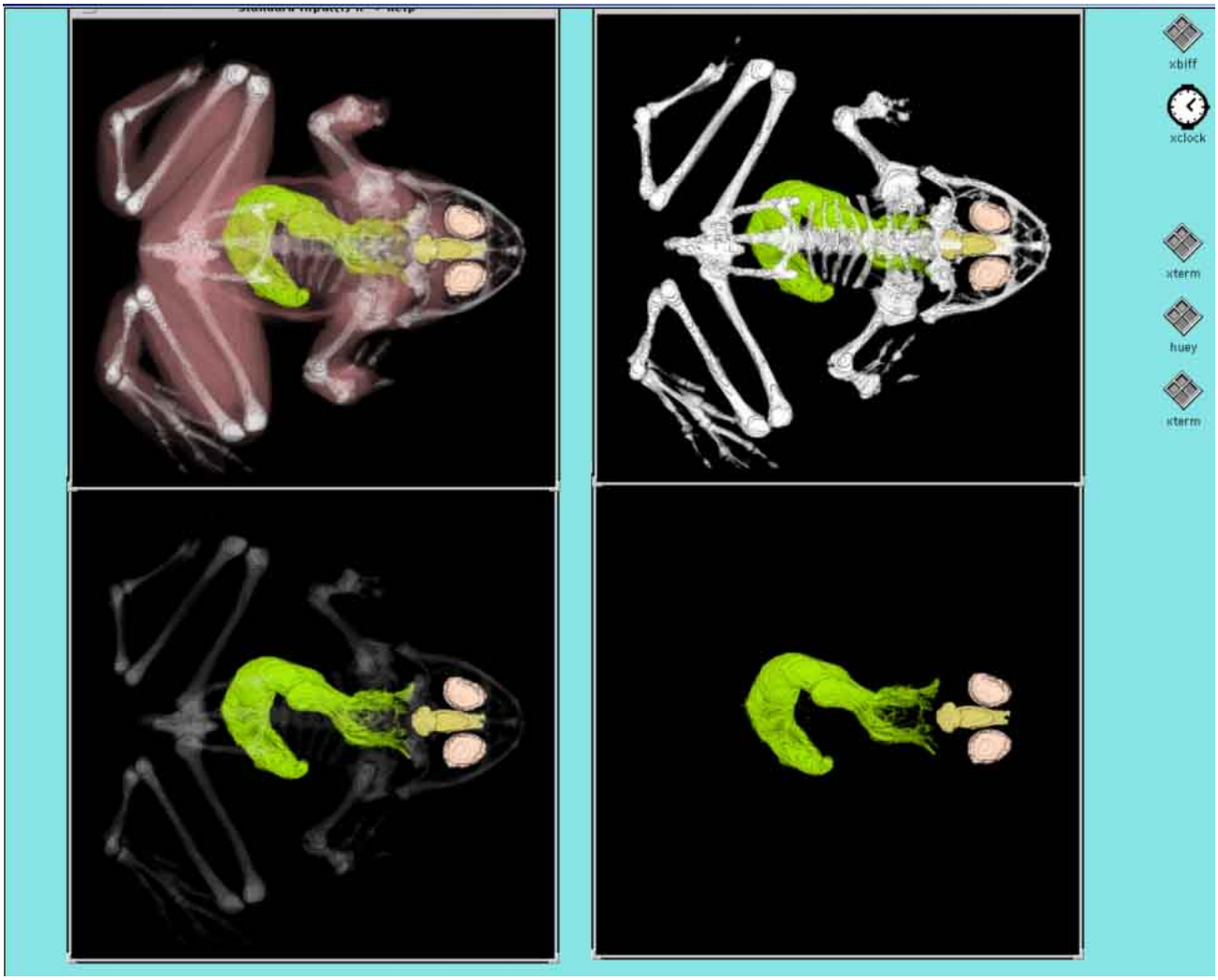

Figure.2 – A screenshot from “Virtual Astronaut”

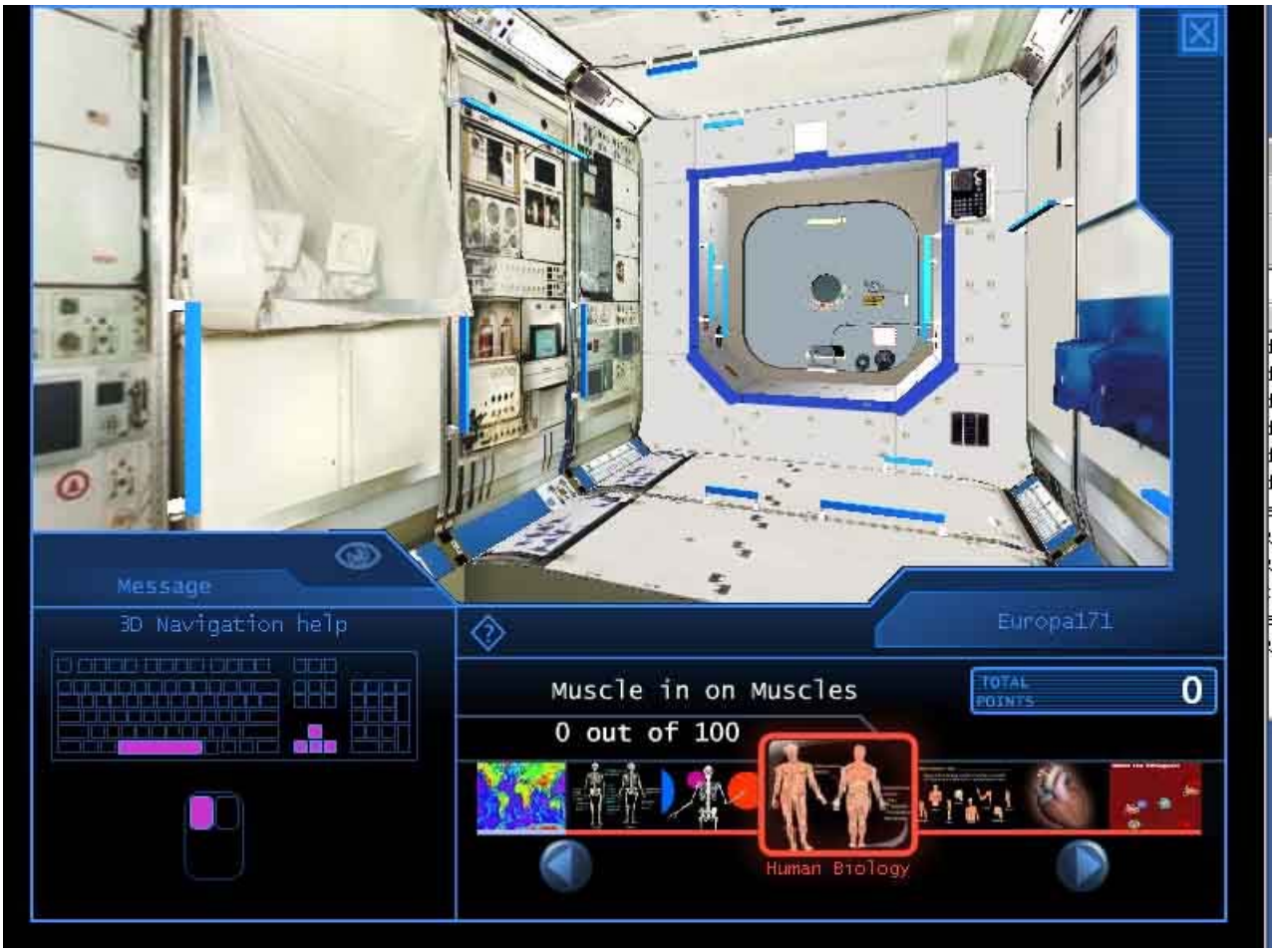

Figure.3 – A screenshot from “Celestia”