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To: Ms. Fernanda Blitz
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Subject: Star Captain, a proposed therapeutic game for children with mild autism

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Abstract

This is memorandum is a proposal for Star Captain, a videogame intended to help children ten years and older who suffer from a fixation with order as a result of a condition on the Autism Spectrum Disorder. The game-play involves travelling through space and gathering coins while avoiding progressively more numerous visual and auditory distractions that are intended to desensitize the player to disorder. If given the assistance of two of the company's interns, I can produce an alpha release of this game in six weeks at cost of $6000.

Discussion

After you joined our Educational Game Division a month ago you conducted a market survey and discovered that there may be a significant untapped market for computer games with possible medical or therapeutic benefits for children with disabilities. Accordingly you asked me to propose such a therapeutic game. You stated that it must operate on both Windows and Macintosh computers and that development of the prototype must cost no more than $6500 and take no more than six weeks to develop. This memorandum sets out my proposal.

According to the Center for Disease Control nearly 1 in every 110 children is diagnosed with autism or a related disorder. Those who suffer from Autism Spectrum Disorder may exhibit any of a number of different symptoms, one of which is a fascination or fixation with order. For example, autistic children may line up their toys or put them in certain rigid orders rather than play with them. This proposal describes a video game that is intended to encourage an autistic child to be more comfortable with disorder.

Object of the Game

Star Captain is a game that I propose for children over ten years of age who suffer from mild to moderate autism, the object of which is to collect coins floating through space while at the same time dodging asteroids. There are three levels to the game, and the player must collect twenty coins at each level to progress to the next. If the player's ship collides with three asteroids in a given level, the player is sent back to the previous level or, if already at the first level, must start the game over.

To make the game more challenging, distractions also appear among the stars: alien spacecraft, slices of pie, comets, and umbrellas. Hitting these would have no effect on game-play; they would serve only as distractions. Similarly, a distracting sound track would be included which would produce at random intervals, and in no particular order, sounds such as those of explosions, police sirens and ringing telephones, laughing and applause.

Game-Play

The computer screen would display a view of outer space, as though seen through the view-screen of a space ship, and white dots, representing stars, would advance toward the viewer and pass by, giving the impression of travel through space. Coins would also appear, and the player would try to gather them by flying directly into them. At the first level, the stars and coins would move slowly and there would be few distractions or asteroids, but in the second and third levels, the speed would increase, as would the number of asteroids and distracting figures and the frequency of the distracting noises on the sound track.

Controls

The controls would be simple: the computer's arrow keys would be used to maneuver the spaceship to the right and left and up and down, thus allowing the user to dodge asteroids and collect coins. On the lower-left of the computer screen would be a counter showing how close the player is to completing the level as well as how many coins are needed to complete it.

Customization

Star Captain would be customizable in several ways. From the game options link on the home screen, the parents of users would be able to turn the soundtrack on or off, and they would be able to record a congratulatory message for the player to be played each time a new level were reached, or use a pre-recorded congratulatory message. The game options link would also allow the player to choose whether the coins appear as silver or gold.

How Space Master Could Help Autistic Children

Star Captain is intended to help autistic children to rely less on structure and repetition by encouraging them to continue to play a game that displays an increasingly chaotic background. The idea is that exposure to increasingly distracting images and sounds will desensitize autistic children to them and help them deal with such things in the regular course of their lives.

Assessment

Upon completion of the programming, my design team and I will submit the game to the company's testing protocol to be sure that the game runs equally well on Windows and Macintosh machines and that no bugs are present that would impair the functioning of the game. If it passes the company's usual testing procedure, we may assume that the product would function well enough to be marketed.

After company testing, I propose to submit the device to North State University's Psychology Department's autism clinic where it will be tested to determine whether it has a positive effect in reducing symptoms of distress and irritation in mildly autistic children. If the clinicians can demonstrate a statistically significant improvement in the symptoms of a sample of mildly autistic children, then I would suggest that the product has been and will be successful.

Details of Proposed Work

There are five main tasks involved in the production of the prototype of Star Captain before its final release: developing modular documentation, writing the code in Python, producing and refining the graphics, testing the game for bugs and revising the code in view of the testing. The proposed schedule is shown in the figure below. All dates are for 2015.

Schedule

Task	*Dates*
Drawing up modular documentation	24 - 31 October
Writing code	1 - 7 November
Producing and refining graphics	7 – 14 November
Testing	14 – 16 November
Revising code in view of test results	16 – 23 November
Final release	24 November

Material, Personnel and Expertise

As Lead Programmer of the New Products Division, I would determine the game-concept, the main architecture of the game, the game-play and the levels. I have been successful in the past with games designed for children: my games *Fright Theater, Don't Touch!* and *Take a Chance* are among the company's best-sellers.

I would be assisted by my two interns Jim Hausbreaker and Sally Quatro, both of whom are senior computer-engineering students from North State University with extensive programming experience.

No special equipment is needed for this: we expect to use three Windows and three Macintosh computers during the programming and testing phases of the game's development.

Budget

To keep the development costs down, I propose to code some of the game myself while employing the two interns named above for routine coding and game-testing. I propose to spend ten hours on the development each week for four weeks, as will each of the two interns. The combined cost of this labor should total approximately $6000.

Conclusion

The proposed computer game is intended to help children suffering from mild autism and, if the routine testing of it and the effect of it during clinical trials is statistically significant, then I suggest that we will have a game that will be both helpful to the user and marketable for us.

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