T-Cell Hero
New Horizons Prototype
Caroline Savanna
New Horizons Foundation

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Introduction

The Bachelor of Innovation (BI) degree program is a unique degree program, similar to a Bachelor of Arts or Bachelor of Science, with a focus on innovation and entrepreneurship. The University of Colorado Colorado Springs (UCCS) is the first University that offers this revolutionary program that combines education from industry professionals, where a interdisciplinary team of students are consultants for real clients assisting them on their business ventures and getting hands-on experience. Integrated into the BI curriculum is a focus on the importance of working within interdisciplinary teams to find innovative solutions, and that focus has been constant throughout the BI Team's time with Caroline Savanna and New Horizon.

Executive Summary

The New Horizons Foundation is an organization dedicated to furthering objectives in various types of charities. Caroline Savannah, a former nurse, came to the BI Teams on behalf of New Horizons to find a team that would create a video game to aid in the recovery of cancer patients. To accomplish this, the game would use guided imagery, a researched healing method that involves visualizing one's body recovering. The resulting game prototype would be presented to a professional game studio that would develop it to completion.

Throughout this semester, our team has been designing a game that allows players to visualize destroying the cancer within their bodies. Utilizing Savanna's wealth of knowledge on the disease, we have been able to put real cell types into the game, personifying them as playable or interactable characters and enabling them to interact with each other as they would in the human body.

Statement of Accomplishments (Coding Team)

To help the client achieve her idea with a marketable approach, the B.I. Team continued from the New Horizon team last semester to make a functional game prototype that she can take to investors and professional game developers for continued development. Because New Horizons was a previous client, the overall concept for the game was outlined in a packet of information detailing immune cell terminology and functions provided by the client as well as an accessible prototype built by last semester's team. Based on that existing prototype and the scope of work, the current B.I. Team continued to work on the game. During the first week of the project, the B.I. Team made a major pivot. Due to greater experience and skill-levels of team members, the Team proposed an upgraded design for the prototype which the client really liked. With the newly-proposed game features and aesthetics in mind, the Team shifted their focus towards creating a prototype that visually appealed to cancer patients of all ages, created a more relatable atmosphere and ultimately created a more enjoyable game to play.

The redesigned focus of the game came through subsequent modifications. Initially, the team dramatically remodeled the aesthetics of the environment with the intent of simulating the insides of a human body. To give an illusion of depth, multiple blurred backgrounds were added with parallaxing scripts that caused them to move as if they were a large distance away. All interactive art assets were also made more closely resemble actual parts of a human body, such as vein-like walls and enemies that actually look like infected cells. To add a more personable appearance to these game characters, the Team implemented a small User Interface (UI) for each character. This is a baseball card-like box that appears when the player hovers over the cell to show what kind of cell it is, its current stats, and a character picture created by Design Team.

The game mechanics were altered greatly as well. First, the game was changed to be physics based, meaning that there is a simulated physics engine that every object abides by. This makes the world seem much more palpable and interactive. Additionally, rather than using traditional WASD controls, players use the mouse to control movement, firing, and navigation. To move, players hold the right-mouse button down in the direction they want to move, giving more of a feeling of driving a vehicle versus translating an image across the screen. Shooting is handled with a charged-shot mechanic, similar to the classic Mega Man weapon. Players are now better able to navigate their surroundings with a togglable "telescope mode," in which the mouse can be used to look around much farther than normal.

The Team added another modification to the game by creating different ideas to enhance the way the player discharges the cytotoxin beam. This included special effects that were added to the cytotoxin beam for graphic upgrades and two different ways to release the cytotoxin including a regular shot and a multi-shot effect that added a compelling aspect to the game. Furthermore, the Team experimented and implemented Artificial Intelligence (AI) behaviors for the cancer cells and friendly cells that created a better experience for the player. Throughout the project, the Team implemented a power-up system to enhance gameplay. For example, if the player moved the T-Cell over the power-up, the cell's maximum movement speed is temporarily increased. The final additions to the protype included sounds effects, an improved start-up menu, and health bars for the enemy cells.

With all these aspects implemented in the fully-redesigned prototype, the Team then continued to create a basic tutorial level that introduces the player to the game using both written instructions as well as voice files. During the creation of the tutorial level, the coding team worked closely with the design team to ensure the success of creating this level. All the accomplishments made by the Team during the semester are in part with the client's vision to be viable for more growth in the future as the game continues to develop.

Statement of Accomplishments (Design Team)

Working with the client Caroline Savanna, we decided that the game needed a make-over**.** The game needed to have a capturing feeling in it, which it lacked. We came to a decision that a few elements needed added or revised : music, sound-effects, redo menu, a

tutorial for players, concept document and new art. With these new elements we hoped to capture a players attention and really get them involved in the game.The music brought a way to capture the person playing by keeping them relaxed or getting them excited depending on the games scenario. Once again, the sound-effects are there for am immersive effect on the player. The menu needed a make-over as it did not follow the current theme we had in the game and also it is far easier to navigate and understand now. As for the tutorial, we believed that there needed to be a way for the player to experience these elements.

To start out the semester for the design team we came together to develop a concept document. When developing the concept document we all met in person to brainstorm the ideas behind the document and to give guidelines to each other. A lot of the work would be done outside of meeting together. As we created the document we were able to develop the new aesthetic and mechanical direction the game should go. The document ended up being our foundation and what we would reference throughout the semester. This document is a guideline to help understand the functionality of the game and the direction the game is going. For referencing, the concept document begins on page 16 of this document, and outlines everything that's included.

The music was thought of because of the way most games incorporate music into their games. The way the music became decided was through several trials with Caroline Savanna. Caroline savanna helped determine the genre and type of music. The music is there to keep the player calm during the game but also make them excited at certain points in the game. In the end, the music is meant to cause a positive effect on them that helps with their recovery as they play.

As for sound-effects, this is an element that is found to be an engaging factor in video games. We wanted a way for the player to recognize what is what and to enjoy the actions that they take in the game. So, throughout the semester we added several different kinds of sound effects. The sound effects added are: shooting, movement, explosion of cancer cells, etc... The sound-effects are an immersive aspect of the game that we have been creating throughout the semester.

When it came to the menu and the art in the game we all decided we wanted something different. We wanted something that would call out to people and that is recognizable. We started off by making the portrait for the Captain of the squad that the player is serving on. The reason for this is that he's the one giving you your orders which is quite important. Next we moved to the T-helper cell which gives the player their instructions on the tutorial. He also helps the player throughout the game understand what they are meant to be doing. We then began work on the Cancer cell portraits, the grunt and boss portraits. All these portraits combined allow the player to recognize who is who. They also allow the players to feel involved and engaged in the game and the characters they interact with. Next we began work on the new menu, we followed the same art style and theme as the portraits, a very organic look. The menu as it was being designed allowed for easy navigation. It was also easy on the eyes, both elements being achieved in the the end.

We then began work on the tutorial layout, the tutorial layout is a blueprint for how we were going to proceed with generating the tutorial level. The way we went about this is going through different layouts for the level and the dialogue that will be added to the tutorial to guide the player. Everything was going as planned and we were proud of the product we were producing. But, we showed Dr. Wortman our tutorial level for feedback, and all the feedback she gave can be found on page 21 of this document. The feedback caused us to make a pivot from our previous direction, but with this pivot we have come up with a tutorial level that we can all be proud of. The tutorial level in the end provided a clear and concise guide on the mechanics of the game. It also showed what the game was all about while capturing the players attention.

Recommendations and Innovation Discussion

Having concluded the preproduction phase, the design and coding teams have identified four major recommendations for Caroline Savanna as she moves forward with her project. First, we recommend that Ms. Savanna conducts a series of playtesting sessions with patients battling cancer. During these sessions, patients should play the tutorial we've developed while Ms. Savanna records their reactions. Ms. Savanna should specifically note how patients respond to certain scenarios provided by tutorial and whether they have mastered the basic controls and mechanics. The first factor will measure the effectiveness of the mechanics' feedback and said mechanics' ability to aid patients in visualizing the immunal battle within themselves. The second factor will measure the effectiveness of the tutorial as a means of teaching mechanics and the intuitiveness of the game's design. Ms. Savanna should give no directions to patients playtesting the game so as to preserve their feedback's integrity. With this information, Ms. Savanna may then provide detailed initial direction to companies continuing development on this project.

Rather than recommending that Ms. Savanna apply for a third semester working with a BI team, we suggest that she begins pitching her project to professional game developers. We recommend she begin by pitching to the developers enumerated in last semester's research. With the new vertical slice and concept document of *T-Cell Hero* (See Appendix), Ms. Savanna has the materials necessary to convey her vision and a general direction to prospective companies. The future developer will use the framework made by the BI teams to bring the game from its early pre-production phase to "alpha" (*i.e.*, a feature complete game) and onward.

To reduce the risk of a developer "over-scoping" (*i.e.*, promising more than they can deliver), we recommend that Ms. Savanna refrains from expanding *T-Cell Hero* to include diseases other than cancer. She should maintain this strict scope until the future development team produces a release-ready game covering the fight against cancer. We recommend this to ensure that the foundational experience is as compelling and medically beneficial as possible before the future developer begins design work on other diseases. An ocean-deep experience will enable players to visualize their immune system far better than a shallow-but-broad game ever

could. Though we recommend sticking to a confined scope for the time being, we still recommend that Ms. Savanna introduces the possibility of adding other diseases in the future. This will convey to prospective developers the full potential of *T-Cell Hero*.

We finally recommend that Ms. Savanna conducts a crowdfunding campaign to further prove a public desire for a visualized alternative to chemotherapy. This would entail releasing *T-Cell Hero*'s current build to the public so that they may test it for themselves. Experiencing the game may attract more donors to the project as they will witness Ms. Savanna's vision firsthand. We suggest using Kickstarter as a crowdfunding platform due to its popularity. Though, other online alternatives exist. We recommend this action for two reasons. For one, it will generate extra funds to continue development on the project. But, a successful crowdfunding campaign will also demonstrate to prospective investors that people want a cancer treatment that boosts, rather than destroys, the immune system. Succeeding at this step provides a complete proof-of-concept to those seeking to sponsor the game, ensuring its development and actualization.

Conclusion and Discussion

In summary, the client Caroline Savanna wanted the BI Teams to design a prototype to show how the immune system combats diseases. Ultimately, she wanted for a vertical slice that she could take to a game company for creation. To address Ms. Savanna needs, the Teams worked to improve the functionality of the game as well as its aesthetics. We've added various functionality such as a change in the game's play style, power ups, an improved user-interface (UI), and refined and simplified controls. The added aesthetics include a change in visual style, voice dialogue, music, and UI changes to enhance the menus' appearance. We've constructed a tutorial for teaching players the controls of the game. We intend for this build to be "pitch-ready" (*i.e.*, representative of Ms. Savanna's vision) for game companies as a concept of what the game will become. After a semester's worth of work, we present to Ms. Savanna (1) a complete concept document comprising the mechanical and aesthetic direction of the game and (2) a tutorial level / prototype representative of the game in motion. After weekly meetings between the client, coding team, and design team, we report that we have exceeded Ms. Savanna's and our expectations. Upon delivering this package, we recommend that Ms. Savanna proceeds to the next step of actualizing her vision. That is, she should begin pitching her game to professional studios using the materials we generated.

Appendix / Supporting Materials

Appendix A: Scope of Work (Coding Team)

Name of the Project: New Horizons

Name of the Sponsor: Caroline Savanna

Purpose of the Project: The team will continue building the functional prototype for a video game designed to help sick people get well. The client's idea is a guided imagery video game that will help people to visualize their body's immune system fighting illness. Upon its completion, the prototype will be presented to a professional game studio for continued development and eventual release.

Objectives and Success Criteria:

· The first objective will be to design and implement the basic components of a game environment.

o When this objective is achieved the game will have one level map, a playable character, two enemy characters with behavior, a powerup system, and friendly/neutral characters (these are the cells or tissue which receive damage from enemies).

· The second objective will be to design and implement the system of goals, challenges, and rewards that will make this game fun to play.

o When this objective is achieved the game will have a defined set of goals that the player must achieve to win the game.

· The third objective will be to complete a functional prototype that is generally free of bugs.

o When this objective is achieved, the game will contain the elements necessary to guide a player to defeat lung cancer in a fun and compelling way. The aesthetics and functionality of the finished prototype will have a level of quality appropriate for presentation to professional game company.

High-level requirements:

· The team's high-level requirement is that they deliver a fully functional prototype that meets the client's vision for a guided imagery video game.

Assumptions:

· The team assumes that the client will be available each week to provide guidance and feedback about the game's design.

· The team assumes that the licensing agreement for the Unity game engine will not change during the semester.

Constraints:

· Time

o Time will be the team's greatest constraint. The team has several design ideas that will likely require full implementation (to be coded into the game) to test suitability. Even with a large development team this process requires significant coordination and effort.

· Scope

o Strict adherence to the scope of work outlined in this document will be critical for completion of this project by the due date.

· Programming Skill

o Most members of the team have three years or less of game design and programming experience.

High-level Project Description and Boundaries:

The team's overall scope is to build one game level in which the player is fighting lung cancer. Included in this game level will be foundational elements such as environment art, a player-controlled character, enemy and friendly characters with simple artificial intelligence (AI), background music, and game sounds. The elements will be artistically represented so that they support the game's cancer fighting theme. Additionally, the game's basic mechanics will be fully implemented. These mechanics include mouse-only control of the main character, the ability to inflict damage on enemy characters, and the code framework that will drive the challenges and rewards associated with the game's objectives.

Not included in the team's scope of work are any game levels or scenarios having to do with diseases other than cancer. The game level will include no more than one playable immune cell character, and not more than two enemy characters. Game save and load options will not be included into this final prototype. Also not included in the prototype are advanced video and audio configuration options which would allow a player to select different screen resolutions and speaker setups.

High-level Risks:

· Risk 1 Development platform

- This project is dependent on Unity game engine as a development platform. If an update to Unity causes the software to become instable, this will negatively affect the team's ability to work on the project.
- Low
- High
- Planned mitigation actions – In order to mitigate the effects of an instable software update, all members of the team will update their Unity installations at the same time. This will take a week after the update is made available to the public, allowing time for bugs to be discovered and fixed.

· Risk 2 Availability

- Each member of the team has his/her own schedule and workload. Because of the nature of software development, team members will often need to communicate with other members. This will sometimes be difficult whenever someone is not immediately available due to classes.
- Medium
- Low
- Planned mitigation actions – In order to mitigate this risk, all members of the team will install the Discord application on their smartphones and computers. Discord will allow members to send alert notifications when they require the assistance of another team member.

· Risk 3 Artificial Intelligence

- The team might not have the necessary programming skills to create the enemy behavior.
- Low
- Medium
- Planned mitigation actions – In order to mitigate this risk, one member of the team is taking an online Udemy course on Artificial Intelligence. Additionally, another team member is currently enrolled in an AI course at UCCS.

Summary Milestone Schedule:

· Milestone 1 - Game environment complete

- All fundamental components of the game are implemented (coded) and ready for integration into the level.

28 Feb 2018

· Milestone 2 - Gamification

- Full implementation of the code structure that will drive the goals, challenges, and rewards necessary to create a fun and engaging video game experience.
- 9 Apr 2018

· Milestone 3 Prototype complete

- The game will be fully-playable at this point. The short amount of remaining time will be used to improve game aesthetics such as art, music, and game sounds.
- 1 May 2018

Stakeholder List:

- Caroline Savanna
  - Our client is the person who came up with the idea for this game, and she is the one who will use this prototype to pitch her game idea to professional studios.
- New Horizons
  - New Horizons is a non-profit organization to whom our client originally presented her game idea. They have asked her to create a prototype that can be further developed by a professional game company.
- Cancer Patients
  - This game's development will benefit cancer patients. Our client has evidence from studies which demonstrate that guided imagery can often give cancer patients an advantage over the disease. She and the team both believe that if cancer patients play our game, they will be more likely to heal due to the placebo effect.
- Game Development Companies
  - Our client has told us that several game development companies, including Microsoft, are interested in developing this game. We must provide a prototype that matches our client's vision and is fun to play. This will make it easier for our client to pitch her game idea and get a company to develop it.
- Potential and Future Investors
  - These individuals might invest in the game depending on the quality of the finished prototype.
- BI Team
  - This team is determined to achieve all of the objectives stated in this document.
- BI Faculty
  - Dr. Stiles and Dr. Kwitek

Signatures:

Caroline Savanna
Chad Credeur
Dylan Updegrave
Tai Martinez
Wesley Hall
William Chaney
Zachary Hosier

Appendix B: Team Charter (Coding Team)

Statement of Purpose

The coding team's purpose is to create a functional game prototype that will meet our client's expectations.

Team Core Values

- Creativity
- Responsibility
- Honesty (about strengths and weaknesses)
- Commitment

Team Member Expectations

- Every member should attend our weekly meetings with the client
- Treat other team members with respect
- If an error in the codebase is discovered, immediately notify the team member responsible for that block of code
- Notify team lead should you realize that you've been delegated a task too difficult to accomplish alone
- Comment your code
- Build the project in Unity to test your code, don't rely on the Unity player
- Produce quality work throughout the semester

Core Competencies

Name	Core Competencies
Chad Credeur	Game design, organization, programming
Dylan Updegrave	Game programming, game design, AI, 2D art/animation, game physics
Tai Martinez	Programming, organization, technical writing
Wesley Hall	Game design, programming, Microsoft Office (Word, Powerpoint, Excel)
William Chaney	Game design, game architecture, sound, programming
Zachary Hosier	Programming, IT security, report writing

Conflict Resolution Strategy

Conflict Between Team Members

- Disagreements

- Team members in conflict should first attempt to solve the disagreement themselves
- If either party is not comfortable with that, then they should contact the team leader so that he can facilitate communication.
- If the disagreement continues then it will be addressed during a meeting between the members involved and the team lead.

Conflict with the Team and Team Lead

- The Team Lead and the upset team member will try to resolve issue immediately.
- The disgruntled member can bring in another team member to mediate the issue.
- If the entire team has an issue with the Team Leader, the team will call a meeting with the lead and make him aware of the issue.
- If the problem persists with the Team Lead, the team can take the issue to Dr. Stiles or Dr. Kwitek in order to find resolution, or to fire the team leader.

Conflict with the Team and Client

- If there is an issue between the client and the team, the Team Lead will set up a personal meeting with the client to discuss the issue and find a solution to the problem.
- If the problem is not solved immediately, the Team Lead will bring the issue to faculty so that they can take action.

Signatures:

Chad Credeur
Dylan Updegrave
Tai Martinez
Wesley Hall
William Chaney
Zachary Hosier

Appendix C: Scope of Work (Design Team)

Name of the Project: New Horizons

Name of the Sponsor: Caroline Savanna

Purpose of the Project: The team will continue building the functional prototype for a video game designed to help sick people get well. The client's idea is a guided imagery video game that will help people to visualize their body's immune system fighting illness. Upon its completion, the prototype will be aesthetically pleasing and able to be presented to publishers.

Objectives and Success Criteria:

· The first objective will be to write a concept/game design document to highlight the main points of the game at hand.

o When this objective is achieved the there will be a more clear vision as to where the game will be heading. Enabling us to develop aesthetic aspects of the game.

· The second objective will be to design and implement the system of goals, challenges, and rewards that will make this game fun to play.

o When this objective is achieved the game will have a defined set of goals that the player must achieve to win the game.

o The third objective will be to have:

- A complete narrative for the level, including voice overs
- Release-ready background art and animations
- Fully composed music for the: Title Screen, In-Game, and Credits.

o When this objective is achieved, the game will contain the elements necessary to guide a player to defeat lung cancer in a fun and compelling way. The aesthetics and functionality of the finished prototype will have a level of quality appropriate for presentation to professional game company.

High-level requirements:

· The team's high-level requirement is that they deliver a fully functional prototype that meets the client's vision for a guided imagery video game.

Assumptions:

· The team assumes that the client will be available each week to provide guidance and feedback about the game's design.

· The team assumes that the licensing agreement for the Unity game engine will not change during the semester.

Constraints:

· Time

o Time will be the team's greatest constraint. The team has several design ideas that will likely require full implementation to test suitability. Even with a large development team this process requires significant coordination and effort.

· Scope

o Strict adherence to the scope of work outlined in this document will be critical for completion of this project by the due date.

· Artistic Cohesion

o Agreeing between the different art styles and how they fit together so it's not total patchwork of art that doesn't fit the aesthetic

High-level Project Description and Boundaries:

The team's overall scope is to build one game level in which the player is fighting lung cancer. Included in this game level will be foundational elements such as environment art, a player-controlled character, enemy and friendly characters with simple artificial intelligence (AI), background music, and game sounds. Further, we will implement accessible design features. These include easy-to-learn controls and prolonged tutorials. An accessible design allows those new to games to benefit from the experience. The elements will be artistically represented so that they support the game's cancer fighting theme. Additionally, we will implement the game's basic mechanics and aesthetics. These include a narrative which both tells an engaging story and tutorializes the game, and visual and audio art to evoke a certain mood and immerse the player in the game.

Not included in the team's scope of work are any game levels or scenarios having to do with diseases other than cancer. The game's narrative will depict the cancer as the one and only enemy. A narrative covering a full arc will not be included in the final product. We will constrain the narrative to a single level. We will also not include release-ready sound effects as we want to perfect other audio aspects (*e.g.*, background and menu music).

High-level Risks:

· Risk 1 Development platforms

o This project is dependent on multiple artistic platforms, IE: DAW's, Bristol Board, Paint Tool SAI, Photoshop. These Softwares must be compatible so that there are no transfer issues between them.

o Low

o High

o Planned mitigation actions – In order to mitigate the effects of an unstable software update, all members of the team will update their own software as needed. This will take a week after the update is made available to the public, allowing time for bugs to be discovered and fixed.

- Risk 2 Availability
  - Each member of the team has his/her own schedule and workload. Because of the nature of software development, team members will often need to communicate with other members. This will sometimes be difficult whenever someone is not immediately available due to classes.
  - Medium
  - Low
  - Planned mitigation actions – In order to mitigate this risk, all members of the team will install the Discord application on their smartphones and computers. Discord will allow members to send alert notifications when they require the assistance of another team member.
- Risk 3 Artistic Cohesion
  - There are many different artistic styles from last semester's work to the current ideas which could clash as we're not a team who've worked long enough to create a cohesive style.
  - Low
  - Medium
  - Planned mitigation actions – In order to mitigate this risk, the team would communicate with one another about how their art styles look. As they discuss they will make a decision as to whether or not to continue with said art style.

Summary Milestone Schedule:

- Milestone 1 - Concept document complete
  - All fundamental components of the game are implemented (coded) and ready for integration into the level.

28 Feb 2018

- Milestone 2 - Gamification
  - Full implementation of the mechanics (kid-friendly), narrative, and immersive elements necessary to create a fun and engaging video game.
  - 9 Apr 2018
- Milestone 3 Prototype complete
  - The game will be fully-playable at this point. The short amount of remaining time will be used to improve game aesthetics such as art, music, and game sounds.
  - 1 May 2018

Stakeholder List:

- Caroline Savanna
  - Our client is the person who came up with the idea for this game, and she is the one who will use this prototype to pitch her game idea to professional studios.
- New Horizons
  - New Horizons is a non-profit organization to whom our client originally presented her game idea. They have asked her to create a prototype that can be further developed by a professional game company.

- Cancer Patients
  - This game's development will benefit cancer patients. Our client has evidence from studies which demonstrate that guided imagery can often give cancer patients an advantage over the disease. She and the team both believe that if cancer patients play our game, they will be more likely to heal due to the placebo effect.
- Game Development Companies
  - Our client has told us that several game development companies, including Microsoft, are interested in developing this game. We must provide a prototype that matches our client's vision and is fun to play. This will make it easier for our client to pitch her game idea and get a company to develop it.
- Potential and Future Investors
  - These individuals might invest in the game depending on the quality of the finished prototype.
- BI Team
  - This team is determined to achieve all of the objectives stated in this document.
- BI Faculty
  - Dr. Stiles and Dr. Kwitek

Signatures:

Caroline Savanna

Dakoda Callis

Sam Layton

Zeno AuBuchon

Jessica Ladewg

Jessica Ladewig

Ira Raspberry-Jenkins

Ira R-J

Appendix D: Team Charter (Design Team)

New Horizons Design Team

Statement of Purpose

The Design Team's purpose is to fine tune the aesthetics to the game that is being made. We want to make the game look more like a game rather than a demo. The Design Team will also be creating a blueprint of sorts to allow others to continue the production of the game, from where we leave off at the end of the semester.

Team Core Values

- **Responsibility**
- **Creativity**
- **Mutual Respect**
- **True to Word**

Team Member Expectations

- **Every member should attend our weekly meetings with the client**
- **Treat other team members with respect**
- **If issues are present within the team be sure to voice it. IE: Other's not upholding their responsibilities, can't make it to a meeting with the client or during the week with the group.**
- **Notify team lead should you realize that you've been delegated a task too difficult to accomplish alone**
- **Produce quality work throughout the semester**

Core Competencies

Name	Core Competencies
Dakoda Callis	**Game design, Organization, Programming**
Sam Layton	**Programming, Game design, Technical / Creative Writing**
Jessica Ladewig	**Game Design, Art**
Zeno AuBuchon	**Game Design, Organization, Creative Writing**
Ira Raspberry-Jenkins	**Music Design**

Conflict Resolution Strategy

Conflict Between Team Members

Disagreements:

- **Team members in conflict should first attempt to solve the disagreement themselves**
- **If either party is not comfortable with that, then they should contact the team leader so that he can facilitate communication.**
- **If the disagreement continues then it will be addressed during a meeting between the members involved and the team lead.**

Conflict with the Team and Team Lead

- **The Team Lead and the upset team member will try to resolve issue immediately.**
- **The disgruntled member can bring in another team member to mediate the issue.**
- **If the entire team has an issue with the Team Leader, the team will call a meeting with the lead and make him aware of the issue.**
- **If the problem persists with the Team Lead, the team can take the issue to Dr. Stiles or Dr. Kwitek in order to find resolution, or to fire the team leader.**

Conflict with the Team and Client

- **If there is an issue between the client and the team, the Team Lead will set up a personal meeting with the client to discuss the issue and find a solution to the problem.**
- **If the problem is not solved immediately, the Team Lead will bring the issue to faculty so that they can take action.**

Signatures:

Dakoda Callis

Sam Layton

Ira Raspberry-Jenkins

Jessica Ladewig

Zeno AuBuchon

Zelo Anbuchan

Appendix E: *T-Cell Hero* Concept Document

New Horizons Foundation
Design Team
T-Cell Hero Concept Document

1 Game Title

T-Cell Hero

2 Razor Statement

Pilot the T-Cell and battle cancer, boosting real immunal efficiency.

3 High Concept

T-cell Hero is a game designed for immersive gameplay in the battle against Cancer. To do so the player controls a Cancer-killing T-Cell in a battlefield. The battlefield allows for a Rising Hero war story where the T-Cell develops as the game progresses.

4 Player Role

The player's role in T-cell Hero is to GO TO WAR against cancer, INJECTING cytoplasm into cancerous cells. The player PILOTS T-cell across multiple battlefields, through various levels, COLLECTING power ups, PROTECTING organs and vitals from cancer cells. The main objective in the game is to rid the body of cancer.

5 Primary Gameplay Mode

The player enters the level and searches for cancer cells. Once cancer cells are located, the player attacks the cancer cells and tries to exterminate them before any vitals are destroyed. Once player has destroyed enough cancer cells, they anger the Cancer Boss. The cancer boss then attacks the immune system general, and the player has to stop the boss before the immune system general is knocked out of commision. If the general is successfully protected the player completes the level. If the player fails to protect the general, the player is desynchronised resulting in a restart of the level.

6 Genre

T-cell Hero is a hybrid of a top down beat ‘em up, and a defender type game. It has a top down view, and the player fights cancer cells. In the second phase of the level, the cancer boss attacks the immune system general and the player has to defend the general from the cancer angry boss.

7 Target Audience

The target audience for T-cell hero are cancer patients of all ages. A person that is new to gaming, prefers short play sessions, and craves a sense of accomplishment. With simple controls, short levels, and quick restarts, T-cell hero is a great game for those who are new to gaming. The game provides both visual and audio feedback to the player when they progress. When the player fails they do not die, instead they are desynchronised from the hero and restart the level.

8 Platforms

The platform for the game will currently only be available on PC.

9 Licenses

As it currently stands we have no licenses to worry about. In the future, however, we will have the unity licensing fees as well as possible branding of Pharmaceutical drugs.

10 Competition Modes

This is a single player game in which it is player versus game. The player is fighting in-game entities. The player is using the game as a form of therapy and as such might not want another person playing with or against them.

11 Progression

As the T-cell completes a round or level they shall increase in rank. The player character will go from recruit to an elite soldier(Tm). From a mechanics perspective the player character will see increase in speed, health, cytoplasm, etc.

The cancer, while it will decrease in overall number, will increase in density and aggressiveness as the game progresses. From the mechanical perspective the number of enemies will increase and they will see an increase in speed.

Level/Round	**Player Rank**		**Enemy Density**	**Enemy Aggressiveness**

Tutorial	**Recruit**		**Very low**	**Very Low**
1	**Ensign**		**Low**	**Low**
2	**Second Lieutenant**		**Medium**	**Medium**
3	**First Lieutenant**		**High**	**High**

12 Game World

The world of *T-Cell Hero* is organic to the human body with characters who are somewhat stylized. This stylization comes from the personification of the roles of the cells within the body. Specifically, the T-Cells work to protect the body from harmful cells and so they are personified as a military fighting against invading cancer cells. The soldiers pilot their cells like fighter pilots in the Air Force, flying to the cancer cells and injecting them with cytotoxins to defeat them. In the body, the T-Cells are trained in the thymus, so to keep with the stylized realism in *T-Cell Hero*, the game's story will begin in the thymus where the military bootcamp is found.

This military exists in an organ city, for our prototype this will be the lungs, but could be expanded to other organs which live inside the body. The fighter pilots and the cancer cells aren't the only organisms to exist in the game world as there are civilians as well in the form of smaller cells such as blood, epithelial, and alveoli with the last two referring to the lungs specifically. Though these civilians have been evacuated from the city to stay safe from the cancer.

13 Features

The world of T-Cell Hero can be played with just a mouse. This allows for simplicity in the game and allows for whomever is playing the game to catch on very quickly to the controls. With that being said it is very useful in the sense that our target audience is going to be kids. It will allow the kids to get right into the game and experience what the game is really about rather than spend hours figuring out the controls to the game. T-Cell Hero also has straight forward objectives that the player can easily follow. These objectives while simplistic allow for a sense of accomplishment, designed to be for young ages the objectives are also satisfactory for adults.

As far as the level the player will be playing on, that will be personalized. By this it means each player will have a dedicated level to their specific patient file. This will give the patient a sense of personalized accomplishments. With this it will be the most effective in

allowing the patient to go through their visual journey of repairing their body. The next goal is for positive feedback, this as well will help the patient with their visual journey. To do this, there will be some sort of sense of accomplishment to the game; IE: celebratory fireworks, congratulations message, gold medal, etc… Also to enhance this there won't be a player death or an explicit defeat. IF there was, it could affect the patient in a harsh and negative way. To avoid this the game will instead restart the patient back to their last saved spot with a message that portrays that they made an error but not a grave one.

As we continue deeper we get into the feel of accomplishment and progression. The way this will be done is through upgrades. These upgrades will allow their character to get stronger which in return will hopefully allow the player feel the same way. These upgrades will be accessible during gameplay and after gameplay. The during gameplay upgrades will be pick-up effects that allow the player to have a temporary boost. The outside gameplay upgrades will be a stats increasing tab for the players T-Cell Hero. With these features implemented it will hopefully allow the player to be more immersed in the game, allowing for a deeper experience. Also, as far as gameplay the player will be switching from attacking to defending in their levels. Initially the player will seek out the Cancer they are trying to destroy. Once a certain amount of Cancer is destroyed others are Alerted. Once the other Cancer Cells are alerted the player will be put into a defending form of gameplay. This defence is solely focused around the General of the Immune system. The players objective will then be to defend said General till the Cancer waves are defeated. This allow the player to have a form of variety when playing the game rather than playing the same level over and over again.

14 Competitive Analysis

Like any game, *T-Cell Hero* has its own competitors in the market while bringing its own strengths to the table. There are three games we believe have similar qualities to *T-Cell Hero*, Flow (2006), Flower (2009), and Creeper World (2009). For the first game, Flow is extremely immersive as the player floats around while eating other organisms, growing as it does so. In *T-Cell Hero*, the player takes immersion to another level as defeating cancer cells indirectly boosts their immune system. This happens because the player will be so focused on defeating the cancer that it will translate to boosting their immune system to defeat their own cancer.

In Flower, the player controls petals flying through the game world as they add flowers to barren spots in the landscape. Players of Flower are interacting with the environment though only marginally, in *T-Cell Hero* players are more active in their role in defeating cancer. In the same vein as the above with Flow, the player is defeating the cancer and feeling as if they are defeating their own cancer.

Creeper World's enemy is similar to the cancer in our game as it invades the game world, filling the space until the player can defeat enough of it to continue to the next level. However in *T-Cell Hero*, the enemies have a more strategic way of attacking. They go through two stages;

they first start by crowding the game world attacking vital organs and after a certain amount of time the "General" of the cancer will appear to attack the player's base and the "T-Cell Suppressor."

15 Risk Analysis

There are several risks and challenges which inhibit our ability to complete our goals. As we are the design side we are limited by what the coding team can actually implement into the game and therefore extremely dependent on what they can do. In addition, we must follow our client's preferences which can limit us somewhat. We are also not a professional development team and lack experience. In this way, it is likely we will lack a lot of artistic cohesion and specific elements like unique sound effects. These things would really bring our game together but aren't possible because of our lacking experience. As a final challenge, we have many time constraints as we work on this game because of full class and work schedules which can get in the way of progress.

16 Layered Tetrad

16.1 The Inscribed Layer

Inscribed Mechanics

Objectives:

Primary gameplay consists of two phases of objectives. In the first phase, players hunt down cancer cells scattered throughout the map. They must do while the cancer cells destroy the level's vital organs (*e.g.*, bronchial trees in the lungs). Allowing the cancer to destroy these vitals decreases a universal health pool for the level. This introduces a timed challenge where players must seek and destroy enough cancer cells before those cells destroy the level's respective organ.

Once the player finds and destroys enough cancer cells, the game moves into its second phase. In this, players must defend a T-Cell Suppressor (represented as a general within a base) as a large wave of cancer cells move in to attack. Their objective is to either protect the suppressor for a specified amount of time or defeat a cancer cell boss (represented as a ring-nosed pig), thus removing the invader's leader and routing the enemy forces.

Player Relationships:

Single-player versus game. In that player-to-game relationship, players should take the role of protagonist where they are conquering the game's challenges. This ensures that patients who play this game feel as though *they* are the ones conquering their cancer, thus boosting their

immunal efficiency. We must then frame *T-Cell Hero*'s objectives in a way where the patients play a pivotal role in deciding the outcome of each battle. Our narrative must also frame the player-character as the true hero of each engagement.

Rules:

Once in their desired level, players control their character's movement and attacks using the mouse. To move, players click and hold in the direction opposite of where they want to move. This burst them forward in a certain direction. The game restricts movement to these means, serving as a way of both constraint and simplification of for patients new to gaming. When near cancer cells, the player can right-click and hold to inject cytoplasm into the cancer to destroy them. Players must hold the button for the full duration of the attack, adding a level of suspense and ultimate satisfaction in destroying each cell as the process is no longer instantaneous.

Players may fail a level through two different ways. In the search-and-destroy phase, players fail if the cancer destroys enough vitals before the player can defeat them. This constraint essentially acts as a time limit. In the defense phase, players fail if the cancer's charging force reaches the T-Cell Suppressor. While player may fail in-game challenges, it should be noted that they do not die. Failure is a momentary setback. Players temporarily "desynchronize" as the game reverts to the start of the phase. Players must never feel as though they cannot defeat the cancer. This prevents players from becoming disheartened, thus maintaining the effectiveness of visual therapy. We should contextualize failure in a way that keeps players engaged but does not disrupt their flow.

Boundaries:

The game is enclosed by the Unity scene boundaries of each level. All sides of the scene block player movement, preventing them from moving outside the game space. The boundaries should further direct players in the general direction of the cancer so as not to leave players feeling lost. This means aligning walls so that players may only move in the direction of the action. The magic circle does not extend beyond the boundaries of the game.

Resources:

Players manage only a few resources in the game. This keeps *T-Cell Hero* accessible to those unfamiliar with gaming. First, the player must manage a health pool representing the vitality of the organ they fight in. This decreases by a static amount when cancer cells destroy vitals (*e.g.*, bronchial trees) placed around the level. And once in the defense phase, players manage a separate health pool representing for T-Cell Suppressor. Players may find certain pickups that repair vitals and increase the central health pool, negating damage done by the cancer. Other pickups increase the speed and attack efficiency of the player.

Spaces:

The boundaries described above delimit the spaces of the game. Levels will guide the player to their long-term objectives (protection of the organ's vitals) with short-term objectives (destroying cancer cells). This means placing static clumps of cancer cells in the direction of vitals so that players know they move in the direction of action. Landmarks like the players base and distinguishable structures placed near vitals will help guide players keep track of where they are in the game world.

Tables:

The game controls numbers ranging from player boost power to the level's universal health pool using values stored in a CSV file. The game will read this in at the start of each level.

Inscribed Aesthetics

Aesthetic Senses:

Vision

The game's art comprises of cartoonish cells and pilots in a style similar to the *Speed Racer* show (1967). Characters will have exaggerated traits to both detail their personality and suggest their immunal function to the player. For example, green pigs will represent the "pilots" of the cancer cells. Their color scheme and bestial look will contrast with the kinder reds and pink of the hero and level. This juxtaposition will characterize their alien and invasive nature. Cartoonish visuals will aid patients who lack knowledge of cancer and their immune system in visualizing the healing process. Ideally, characters' features will speak to the player through metaphor, allowing them to benefit from the game's visual therapy. The cells which characters pilot will retain some semblance to reality. This realism assures that patients knowledgeable of cancer and the immunal process will see the parallels between the game and their own body. From this, both knowledgeable and ignorant players will benefit from the game's visual therapy.

Hearing

We intend to use sound effects in the game to provide feedback for player actions and inform players of current states of the level. For example, shooting the player-controlled cell in a given direction will play a *swoosh* sound effect. In-game states like angering the ring-nosed pig (signifying that players have reached phase 2) plays a *roar* sound effect. The game will also include background music designed to uplift the player.

Touch

As mentioned above, *T-Cell Hero* has simple controls comprising entirely of mouse movements and clicks. Player fatigue shouldn't occur within a standard play session as players aren't working with needlessly complex controls. This should maintain the game's accessibility.

Smell and Taste

The game does not include features that toy with these senses.

Aesthetic Goals:

Mood

The game's visuals and audio should work to inspire the player to keep fighting their cancer. We will accomplish this with impactful music and an uplifting "rising hero" story. Further, we hope to display a level of realism to the game so that medical experts will more likely embrace our game. We'll accomplish this through somewhat realistic cell sprites and our core gameplay loop.

Informational

The game will display important information like the level's universal health pool and remaining cancer cells on a GUI layer near the top of the screen. Also, a map displayed on the bottom right of the screen will pinpoint both the location of the player and areas in which cancer cell clusters gather. Sound effects will provide feedback to the player based on their actions. If players see their character move, a sound should play to reinforce that. And if the level's health reaches critical conditions, another sound should play to reflect that.

Inscribed Narrative

Premise:

Players control the T-Cell Hero, a pilot fresh out of the training in the thymus. They control a powerful T-Cell capable of combating cancer cells. Cancer has infected the body in which the hero inhabits (which is implied to be the player's) and, along with a force of other T-Cells, the player must rid their body of the invading force.

Setting:

T-Cell Hero is set in the player's body. When in-game, players use this to visualize their own immune system fighting the cancer. Each level / series of levels will model themselves after different organs. Within each level, various landmarks will signify to the player what organ they are in. For the vertical slice we intend to create by the end of the semester, it'll be set in the lungs where the player fights a strain of lung cancer.

Character:

Aside from them being a skilled pilot fresh from training, the player-character will not have many distinguishing features. We want players to feel as though they are the ones controlling their cell and destroying cancer. Because of this, having a blank character allows players to superimpose their own personality onto who they control.

Though the player-character lacks many distinguishing traits, there are a variety of supporting characters who'll interact with the player. First, there is a T-Helper cell who, like the player-character, recently graduated from training. The two were friends in training and that relationship continued into the in-game events. This character both teaches the player main mechanics while also providing emotional encouragement. The T-Cell Suppressor is another supporting character. He has the personality of a military officer, providing much less encouragement than the scout. His purpose is to remind the player of their main objectives while also teaching them about the greater flow of each level. Finally, there is the Ring-Nosed Pig, who represents the cancer's leader. This character is a personification of the cancer, exhibiting traits of gluttony and wrath.

Plot:

T-Cell Hero contains a linear plot following a T-Cytoxic (T-C) in the battle against cancer. As players complete each level, the T-C increases in rank, ultimately becoming a seasoned T-Memory cell.

The levels themselves follow a much more structured narrative. A quick briefing prior to the level (done through a text crawl with narration) serves as exposition for the level. This will detail the general presence of the cancer in the body and the place of the immune system "task-force" in eliminating that threat. The level's inciting incident is then the T-Helpers detecting droves of invading cancer cells in a certain organ, resulting in the T-Cell Hero's deployment. This is the official start (meaning the player is now active) for the level. Rising action consists of the player hunting down packs of cancer cells before they harm the organ's vitals. Here, we'll increase tension through conveying urgency in the dialogue.

Once they have destroyed enough cancer cells, players have angered the Ring-Nosed Pig. This story beat consists in a drastic change in tone towards desperation. T-Helpers will warn players that if they do not return to base, it will be game over. This moment will also introduce the level's villain (the Ring-Nosed Pig) who will taunt players as it makes its way towards the T-Suppressor. Falling action consists of players fighting back the offensive by destroying cancer bodyguards and the Ring-Nosed Pig itself. The level concludes with the destruction of the RNP, resulting in the remaining cancer cells. Tension relieves to a sense of ease as characters inform the player that they've driven the cancer back. As a part of character growth, both the T-Helper and T-Suppressor cells will commend player-action, telling them that they've grown as a fighter. A post-level conclusion text and narration will serve as debriefing. This will detail how the player's efforts have aided in the greater war effort.

Inscribed Technology

We'll develop *T-Cell Hero* in the Unity game engine using C# as its programming language.

16.2 The Dynamic Layer

Dynamic Mechanics

Procedures:

There will be a total of two different level types the player will be placed in. One being a search and destroy, the other being a defending role. The goal of the first level will be to seek out the cancer and destroy it as they find it. Once they'd killed enough cancer they will be switched over to the next level. This level is going to require the player to defend the General from oncoming Cancer.

Meaningful Play:

The whole premise behind the game is to destroy the cancer within the area of the body that they are fighting. To do this they have to complete both of the stated levels above. After they have done this they will have won the game and earned some sort of reward as compensation and for a sense of achievement.

Strategy:

As far as strategy goes, the player will want to do their best to stay alive and to destroy as many cancer cells as they possibly can.

Outcome:

The hopeful outcome of the game is to leave the patient with a sense of relief and also a healing process. By this we mean that the visual guidance will have helped the player's body begin a healing process just like in the game itself.

Dynamic Aesthetics

Procedural Aesthetics:

There will be a menu system that will allow the player to enter their info of the type of cancer that they have, where it's located, and the stage of cancer they are in. After this they will be switched to another screen that allows them to choose their area they input previously. Once selected the game will launch them into the battlefield.

Environmental Aesthetics:

As the players kills more and more cancer the level will begin to change color. This means that the level will become more vibrant and give a more healthy tone to the surrounding organ, giving the player of yet another sense of progress. The level will also change when it goes into the defense mode, placing the player in a fort of some kind.

Dynamic Narrative

The overarching narrative does not change according to players' actions. Players will start as an ensign and gradually progress to the rank of Memory T-Cell. At this point, they will have defeated the Ring-Nosed Pig for the last time, routing the remaining cancer cell forces. However, there are a few moments where the player has control over smaller moments in the narrative.

In certain points in character dialogue, players have the option to respond either "Yes" or "No" to other character's questions. For instance, if their scout companion asks if they would like to be taught how to move, players can respond (Y/N) by clicking a pop-up located on the bottom-center of the screen. This will affect the narrative in that players can skip certain sections if they feel that they aren't necessary. In other instances, responding "Yes" or "No" provides players with alternative dialogues response from other characters. In their first battle, one character asks the player if they are nervous. Responding with one option over the other causes the character to give different words of encouragement.

Small moments of the narrative can change with player loss. If, when the Ring-Nosed Pig cell awakens, the cancer reaches the T-Cell Suppressor, players have lost the level. Yet because the cancer does not kill the suppressor, there is hope that players may fight another day. When players fail, they may retry the level with the narrative context that the immune system has regrouped and launched another attack. We'll accomplish this through a title card displayed before the level begins and a brief narration explaining the renewed offensive.

Dynamic Technology

16.3 The Cultural Layer

Cultural Mechanics

Game Mods:

Because players will use our game in a medical setting, players likely won't modify in-game values or assets to create different modes of play.

Custom Game Levels:

As mentioned above, users will not play our game for entertainment purposes. Therefore, we don't foresee user generating custom game levels using our base product.

Cultural Aesthetics

Fan art:

Patients using this game to boost their immunal efficiency likely won't have the time or the energy to create fan art of our game. Still, there is a possibility that those charmed by *T-Cell Hero*'s visuals and characters may create their own sketches of them.

Cosplay:

For the reasons stated above, players likely won't cosplay as any of the game's characters. It is a possibility but not a likely one.

Cultural Narrative

In being the first game to utilise visual therapy in cancer treatment, *T-Cell Hero* will very likely generate a greater cultural discussion concerning the benefits of such treatment. If medical professionals and cancer patients receive our game well, visual therapy will likely become a more dominant method of treatment. This could very well save lives because unlike chemotherapy, this method of treatment does not harm the immune system in the process.

Cultural Technology

Patients using this game likely won't develop external tools for this game. There is a chance that someone may develop an artificial intelligence that plays the game for users. This would allow those who lack the energy for gaming to benefit from visualizing an immune system battling against cancer. Medical professionals could also develop external technology that enhances the game's curative properties. For instance, they may develop tools which explain the exact science of the human immune system while players complete similar actions in-game.

Appendix F: Dr. Wortman's Tutorial Feedback

Chad,

I took a look at your game and your concept document and opening scene design. I think you've got a good start on what could become an interesting game. However, you obviously have a bit of work still left! [Ignore any inaccuracies I've included here about the science….just replace those suggestions with the correct science]

Most importantly, you don't yet have your core mechanic complete, yet you have a bunch of other irrelevant stuff that you'll probably want to swap out later anyway – like your opening "scene" – it's boring, not integrated into the game, and doesn't fit with your story – why bother creating this "filler" content when you have plans to remove it later? So right now, the game isn't really demonstrating how engaging and rewarding it is – THIS is the most important thing to implement! To be an effective game to help create cancer-fighting attitudes in the players, you need to have engaging gameplay that the player feels rewarded at the end of the experience. This is the most important thing to get "right" – if the player doesn't feel like they've achieved in the game, their attitude will not be changed to give them a more positive outlook to fight their own cancer. You need to get the "achievement" part right (not the achievements list…but the feeling of achievement through gameplay). So, my first suggestion is to focus on that for your next iteration – you have some cool elements (like the little splash of particles when you hit another entity) – but without the ability to impact the cancer cell's health, this is irrelevant! Focus on the gameplay – the core mechanic itself – get this "right" before you build anything else and the rest will just fit its way into the game!

To round out your core mechanic, you'll want to integrate some kind of BIG visual when cancer cells are destroyed (a HUGE celebration for each one that is destroyed) – have them shrivel to nothingness, explode, something BIG so that the player gets excited.

You also want to be able to show how many cells are left so that they can get excited about "counting down" to success! This will help reinforce the positive connection between killing off the cancer and their own personal achievement in the game. Having them think "just 5 more cells…I can do it!" or even better – have the "commander" help them keep a count-down or help them find those last few cancer cells – encouraging them throughout the experience will help them feel that sense of achievement and will get them excited to keep going and complete the level.

I assume you'll also have the cancer cells reproducing at some rate to keep the game more engaging? Make sure that you make a BIG deal about this element as well – so that the player can see and hear the cancel cells reproduce and it should add stress to their experience –

encouraging them to keep going and keep killing the cancer! This also models the reality of cancer – between treatments, cancer cells continue to reproduce if you don't get them all, so you have to keep attacking them. Again, you can have the commander inform the player of a specific "pocket" of new cancer cells or whatever – to let the player know that the pressure is on and she needs to keep going.

Do you plan to have larger cancer cells be more difficult to kill or more likely to reproduce – so that they're more dangerous? You probably want to make a bigger deal about the danger of the cancer cells visually – right now, they look just like the healthy cells, just a different color. You want them to look "scary" in some way so that the player is drawn to destroying them. Cancer cells DO have a different shape (internally and often externally) from healthy cells – they look sickly – so take inspiration from the science of cancer cells – you can teach the player something about cancer cells while they're playing this game by including a little science!

Next, rethink how you integrate the story – right now, your "opening scene" as it is, is boring. However, your revised version in the document you sent me is overkill. Scripts are about 1 minute per page of "real-time". So as a 5-page opening scene, this is going to take at least 5 minutes for the player to get through and really isn't necessary. You need to cut this down to 1 minute or less and you don't actually have to explain a lot of the things you're explaining – you give WAY too much detail on the backstory – you can cut down on this a ton and reveal it later in the game, if appropriate and necessary. For example, why bother saying that ensigns (not the entry-level rank from your concept document, btw) aren't well trained and then expected to just jump into this new tech and blah, blah, blah – this is too much expository information and really isn't necessary at all. Instead, you can quickly summarize this by simply having the commander say something like, "Recruit! Get your tail over here (LEFT-CLICK on the X)! We have cancer cells to kill!" Then have a specific spot on the screen marked with an X. Once the player arrives at that location, the commander can then say, "Cancer cell, 3 o'clock! Shoot your cytotoxin at it (RIGHT-CLICK on the X)!" Then have a specific spot on the cell marked with an X. Once they've shot it once, say, "Great job, but to completely get rid of it, we have to fill it with toxin. Keep shooting until it bursts (HOLD RIGHT-CLICK on Cancer Cell)". This game isn't complex enough to warrant 5 pages of intro….Then, slowly ramp up the number of cancer cells that are near the player or send them on several specific missions to go and kill a little cluster or whatever. Then, later on, introduce the T-suppressor when the player runs into their first one, don't introduce it during this initial tutorial.

Also, don't ask the player if they want instructions – just integrate that into the game itself and skip instructions that they have already demonstrated. If you shorten the "tutorial" element in the first place or let them click to advance the dialog, then you won't have to actually ask them questions. If you're going to ask them any questions, make sure to keep it within the

commander-recruit story line – and honestly, the fewer questions you ask, the better. Why does he have a buddy from the academy? Does this character play a role in the game? He just seems to appear for part of scene 3 (which seems to really just be part of scene 1….) and then he doesn't seem to have any real role. If you're going to be working WITH him in some way, then he is worth introducing, but otherwise, he plays no role.

Hopefully this has been somewhat helpful – most important take away is to get the core mechanic working, ignore everything else until this element is PERFECT and highly motivating! Implement all the interesting challenges, features, and obstacles that showcase what is so much fun with this core mechanic – and then the rest will just come from there.

Let me know if you'd like to meet to chat more about this or if I've misinterpreted something! I'd be happy to meet with your team if you think that would be helpful!

Thanks!

Dana Wortman, PhD
Senior Instructor, Game Design and Development

Appendix G: Tutorial Dialogue Script

T-Cell Hero
Lung Level Opening / Tutorial Dialogue
Reworked in Reference to Dr. Wortman's Feedback

Scene 1:

Scene opens on a dark screen. Muffled sounds of T-Cytotoxics fighting cancer cells can be heard in the background. These continue for a moment. Then, the player hears a clear and commanding voice.

1. Squadron Commander: Get it together, recruit! Our offensive will start any minute.

Screen transitions to its regular brightness, showing the player a cellular battlefield. Their character (a T-Cytotoxic or fighter cell) rests center screen. The muffled sounds heard from the start of the scene become clearer but are not loud enough to drown out the voice of the Squadron Commander. Blood-vessel walls encircle the player in all directions save for a path leading upward.

2. Squadron Commander: Before we can launch our attack, we'll need to regroup. Move to the rendezvous point. It's not far from here.

Game instructs player: Press [right-mouse button icon] to move.

The player traverses through a small, winding passage leading upward. On the other side of the walls, 4 T-Helper cells in a V-formation move upward and off screen. They move slightly faster than the player character. At the end of the passage, the player meets 3 other T-Cytotoxic cells. These cells are slightly darker than the player's cell to distinguish them from the player character.

3. Squadron Commander: Is that everyone? [*Pauses to scan group*] Good. Well, you all know why we're here. Not long ago, reconnaissance spotted an emergence of cancer in this area. Upper command has tasked us with clearing those pigs out before they can stir up too much trouble. We'll need to act fast to contain them and hopefully rid the body of them altogether.

4. Squadron Commander: But before we can strike back, we'll need to clear a path for our T-Helper scouts. This'll provide us with vital information on the enemy's invasion force. Split up and cover as much ground as possible.

The 3 NPC T-Cytotoxics disperse in different directions. A path leading to the right opens for the player. As the player winds through this, they can see another T-Cytotoxic fire their toxin into a cancer cell. The cell then bursts. As the player reaches the end of the path, they encounter a lone cancer cell.

Game instructs player: Press [left-mouse button icon] to fire.

The player fires into the cancer cell and it perishes, bubbling into a spectacular explosion of cellular bits. The squadron commander moves onto screen, on the other side of the blood-vessel wall.

5. Squadron Commander: [*Confident*] Getting the hang of things I see. We'll make a soldier out of you yet. [*Now serious*] We've spotted a cluster of cancer cells just up ahead. Get there in double-time before they compromise this position! Take this to pick up the pace.

A speed-boost item drops into the passage.

Game instructs player: Move to the [speed boost icon].

As the player absorbs the speed-boost, an length path opens to the upper left. An icon appear on the GUI, denoting the active power-ups' type and duration. As the player moves onward, they should notice they are faster than before. At the end of the path, there is a group of cancer cells.

6. Squadron Commander: Think you can take them? Watch that you don't overload your toxins.

Game instructs player: Destroy the cluster!

The toxin meter on the GUI flashes. As the player fires, they should notice that the meter fills by increments and gradually empties when they do not fire. The player then dispatches the cancer cells using the knowledge they've learned.

7. Squadron Commander: [*Grave*] Recruit, are you there? T-Helpers spotted some more cancer cells up the path. But that's not all. [*Pause*] It seems some friendly cells were cut off by the invasion force. You'll need to get there quick before the cancer cells take them out.

A path leading to the North-West opens up. If possible, the music switches to evoke a greater sense of urgency. The player then enters the final arena.

Game instructs player: Protect the friendly cells!

The player encounters a cluster of cancer cells greater than the ones they've faced before. As they fight, they should notice that their enemy will try to attack and destroy the friendly cells trapped in the arena. Depending on their success in protecting said cells, either of the two following dialogue lines plays.

8.1. Squadron Commander: [*Triumphant*] Great job! Because of you, these cell will live another day.

8.2. Squadron Commander: *Agh!* We're too late! Don't be disheartened. There are plenty of cells left to protect.

9. Squadron Commander: It's good to see you learn quickly. We need soldiers like you on an operation this dangerous. But in the future, they won't be so easy to find. You'll have to search for cancer clusters on the battlefield before you can destroy them. I'm sure you'll pick things up.

10. Squadron Commander: [*Pauses*] Looks like we've cleared the way for our scouts. They should return soon with info on where the cancer is and how many we're up against. For the moment, rest. You'll need all you can give for this offensive. We'll move out shortly.

Scene ends with a fade to black.