

Sprint 3 Planning Document

Team 18 : Brendan Raftery, Kate Lorenzen, Vinson Luo, Jonathan Grider

# Sprint Overview

During this sprint, we hope to complete the rest of the essential features and to further expand our application. With much of the fundamental implementation in and tested using a small set of data for assessing their functionality, we are ready to populate our application’s database. Meanwhile, the application’s user interface features will be refined, such as better visuals, more intuitive interface design, and algorithm maintainance.

**Scrum Master:** Jonathan Grider

**Meeting Plan:** Tuesdays/Thursdays @ 3:00pm

**Risks and Challenges:**

We were able to complete many of the important features of our application, and we had tested those features on our current database, which holds limited data for now. When we populate the database with a lot more data than it currently has, we could risk new problems and errors that may impact performance of the application. Additionally, expanding the database will be time-consuming. We will be attempting to gather data and information on over 150 atoms and molecules from various open sources and inserting all that data into the database. It is crucial for us to maintain the functionalities our application had in the previous sprint to support such huge expansion in this sprint.

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# Current Sprint Detail

**User Story #1**

As a user, I would like to be able to zoom in and out of my workspace to see larger and smaller areas.

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| # | Description | Estimated Time | Owner |
| 1 | Implement atom selection outside of action modes | 2 Hrs | Brendan |
| 2 | Add in script for necessary UI to follow camera | 3 Hrs | Brendan |
| 3 | Add camera manipulation ability for zooming in and out of a trium that is inside of the workspace | 7 Hrs | Brendan |

Acceptance Criteria:

* Given that the Selection algorithm is implemented correctly, when the user selects a Trium outside of any action state, the Trium will respond correctly by zooming the camera in on itself
* Given the zoom in implementation is written correctly, when the user selects a Trium outside of any action state, the camera will properly zoom in on the Trium and magnify it
* Given the zoom in implementation is written correctly, when the user deselects a Trium outside of any action, the camera will properly zoom out away from the Trium and back into full view of the main game scene

**User Story #2**

As a user, I would like to be able to level up to unlock new atoms and compounds to create

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| # | Description | Estimated Time | Owner |
| 1 | Work on researching new leveling paths for the user to take | 6 Hrs | Brendan |
| 2 | Gather information and facts for new Triums and reactions and add them to the database | 10 Hrs (Each) | Brendan,  Vinson,  Kate,  Jonathan |
| 3 | Add reactant and product parsing strings to database within the Reaction table | 7 Hrs | Jonathan |
| 4 | Adding exp amounts to all of the levels and diagram out the suggested level progression for the player | 8 Hrs | Brendan |
| 5 | Create unit tests to test all reactions to make sure they award experience properly and also are displayed properly in all of the related UI | 4 Hrs | Brendan |

Acceptance Criteria:

* Given that the database and levels are implemented correctly, when the user performs actions on any Trium, the game should award the proper experience amount depending on if they are being created for the first time or a subsequent time.
* Given that the database is implemented correctly, when the user prompts for information of a selected Trium, it will provide the correct information on the selected Trium
* Given that the database is implemented properly, when the user discovers new Triums, the information of the new Trium should be able to be added into the Backpack’s dynamic data structure, enabling the game to spawn them as prefab clones after that point
* Given that the database is implemented properly, when the user discovers new Triums, new actions will be unlocked and the game will display the new action options in the right side Action Bar

**User Story #3**

As a user, I would like to be quizzed to see if I am retaining the information taught to me on the application.

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| # | Description | Estimated Time | Owner |
| 1 | Create UI panel to display the multiple choice quiz | 3 Hrs | Vinson |
| 2 | Create and populate Quiz table with quiz questions | 4 Hrs | Jonathan |
| 3 | Compile facts and information to create answer choices, solutions for quizzes and place them in the Quiz table | 9 Hrs | Jonathan |
| 4 | Create an algorithm to obtain information about the quiz from the database | 6 Hrs (Each) | Kate, Jonathan |
| 5 | Create an algorithm to have Reaction, Group, and Fusion choose a quiz question for a task | 10 Hrs | Kate |
| 6 | Create an algorithm to populate the popup with the chosen quiz question and answers | 4 Hrs | Kate |
| 7 | Debug and test algorithm using unit tests | 5 Hrs | Kate |
| 8 | Connect algorithm to UI that displays the quiz question | 5 Hrs (Each) | Kate, Vinson |
| 9 | Connect algorithm to Experience mechanism that provides a level boost if the user answers the quiz question correctly | 2 Hrs | Brendan |

Acceptance Criteria:

* Given that the quiz UI panel is correctly implemented, when a user’s gameplay prompts a quiz, a UI panel will pop up.
* Given that the algorithm for reading information is correctly implemented, when a user opens a quiz popup, the text on the popup panel will display the appropriate quiz.
* Given that the algorithm for reading information is correctly implemented, when a user opens a quiz popup, the texts on the buttons will display the appropriate answer choices for the quiz question.
* Given that the algorithm for reading information is correctly implemented, when a user selects an answer to the quiz question on the UI popup, the application will respond correctly to the given answer.
* Given that the algorithm is connected to the leveling system correctly, when the user answers a quiz question correctly, the user will be rewarded with experience.

**User Story #4**

As a user, I would like to be able to turn off and on the faces that appear on the chemical structures.

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| # | Description | Estimated Time | Owner |
| 1 | Create facial animations for Triums | 2 Hrs | Vinson |
| 2 | Create unit tests to assess functionality of the toggle switch on the Trium faces | 2 Hrs | Vinson |

Acceptance Criteria:

* Given that the animations are implemented properly, when the user creates any Trium, the spawned prefab instance in the workspace will have a facial animation attached to it.
* Given that the scripted animator controls the animations correctly, when the user looks at the Triums, the Triums’ facial animations will change at random intervals to boost appearance of liveliness
* Given that the UI switch is correctly implemented, when the user interacts with the switch, the switch will respond by turning on or off.
* Given that the connection algorithm is correctly implemented, when the user interacts with the switch, the Trium faces will be toggled on and off.

**User Story #5**

As a user, I would like to be able to select an Trium from the workspace to look at its stats and information

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| # | Description | Estimated Time | Owner |
| 1 | Create UI for displaying Trium information, such as name, and level statistics | 2 Hrs | Vinson |
| 2 | Link UI feature to main scene’s zoom-in feature of camera manipulation | 2 Hrs | Vinson |
| 3 | Connect UI display implementation to backpack script for reading dynamic data | 3 Hrs (Each) | Vinson, Jonathan |
| 4 | Create unit test to make sure that the informational display outputs correct information on the selected Trium | 2 Hrs | Vinson |

Acceptance Criteria:

* Given that the UI is implemented properly, when the user selects a Trium outside of any action state, the selected Trium will display a UI showing information on the Trium
* Given that the connection between the UI informational display is properly connected to the Backpack’s dynamic data, when the user selects a Trium outside of any action state, the selected Trium will display accurate information on the Trium’s name and level stats
* Given that the connection between the UI informational display is properly connected to the main scene’s zoom-in feature of camera manipulation, when the user selects a Trium outside of any action state, the camera will zoom in on the Trium, with the informational display in view
* Given that the connection between the UI informational display is properly connected to the main scene’s zoom-out feature of camera manipulation, when the user deselects an Trium outside of any action state, the camera will zoom out away from the Trium, with the informational display exiting out of view

**User Story #6**

As a user, I would like to be able to discard a Trium into a wastebin after receiving a notification to make sure I am certain of my decision

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| # | Description | Estimated Time | Owner |
| 1 | Create UI for discarding Trium, which prompts the user to confirm on the decision of deleting the Trium in the game | 2 Hrs | Vinson |
| 2 | Link UI feature to main scene’s zoom-in feature of camera manipulation | 2 Hrs | Vinson |
| 3 | Connect UI implementation to backpack script for updating dynamic data | 3 Hrs (Each) | Vinson, Jonathan |
| 4 | Create unit test to confirm that the targeted Trium is deleted as desired | 2 Hrs | Vinson |

Acceptance Criteria:

* Given that the UI is implemented properly, when the user selects a Trium outside of any action state, the selected Compound will display a UI showing the delete option
* Given that the UI is implemented properly, when the user prompts deletion of the selected Trium, the application will prompt the user to confirm that decision
* Given that the UI is implemented and connected properly to the Backpack’s dynamic data, when the user confirms deletion of the selected Trium, the game will delete the Trium and remove it from the backpack, making it no longer interactable
* Given that the connection between the UI is properly connected to the main scene’s zoom-in feature of camera manipulation, when the user selects a Trium outside of any action state, the camera will zoom in on the Trium, with the delete option in view
* Given that the connection between the UI informational display is properly connected to the main scene’s zoom-out feature of camera manipulation, when the user deselects a Trium outside of any action state, the camera will zoom out away from the Trium, with the delete option exiting out of view

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# Remaining Backlog

**Functional**

1. **User**
   1. Introduction
      1. As a user, I would like a tutorial for most features of the game
      2. ~~As a user, I would like to be able to zoom in and out of my workspace to see larger and smaller areas~~
      3. ~~As a user, I would like to be able to level up to unlock new atoms and compounds to create~~
   2. Individual Atoms
      1. ~~As a user, I would like to be able to collect atoms representing the naturally occurring elements~~
      2. ~~As a user, I would like to have my collection of atoms visualized inside of my workspace~~
      3. ~~As a user, I would like to fuse elements to create another element with the combined amount of protons.~~
      4. ~~As a user, I would like to be able to select an atom from the workspace to look at its stats and information~~
      5. ~~As a user, I would like to be able to refer to a journal for facts and trivia on an atom of interest~~
      6. As a user, I would like to be able to increase my atoms’ level stats
      7. ~~As a user, I would like to be able to refer to a glossary for all of the possible atoms discoverable in the application, and the ones discovered thus far~~
      8. ~~As a user, I would like to be able to discard an atom into a wastebin after receiving a notification to make sure I am certain of my decision~~
   3. Compounds
      1. ~~As a user, I would like to be able to perform chemical reactions on chemical structures within my workspace to formulate new ones~~
      2. ~~As a user, I would like to be able to perform ‘Group’ on two or more atoms to create a single-element molecule.~~
      3. ~~As a user, I would like to be able to open a list that shows all of the possible compounds that are made up of at least one of the structures that is within my workspace~~
      4. ~~As a user, I would like for there to be a chemical formula listed at the top of the user interface that will help guide me in selecting the chemical structures needed for the reaction or bonding I am in the process of completing~~
      5. ~~As a user, I would like to have my collection of chemical compounds visualized inside of my workspace~~
      6. ~~As a user, I would like to be able to select a compound from the workspace to look at its stats and information~~
      7. ~~As a user, I would like to be able to refer to a journal for facts and trivia on a compound of interest~~
      8. As a user, I would like to be able to increase my compounds’ level stats
      9. ~~As a user, I would like to be able to refer to a glossary for all of the possible compounds discoverable in the application, and the ones discovered thus far~~
      10. As a user, I would like to be able to view a visual representation of the compounds I have unlocked
      11. ~~As a user, I would like to be able to discard a compound into a wastebin after receiving a notification to make sure I am certain of my decision~~
   4. Settings
      1. ~~As a user, I would like to be able to have different background color options available for me to chose from in the settings menu~~
      2. ~~As a user, I would like to be able to turn sound effects on and off in the settings menu~~
      3. ~~As a user, I would like to be able to turn any music that plays on and off in the settings menu~~
      4. ~~As a user, I would like to be able to turn off and on the faces that appear on the chemical structures~~
   5. Education
      1. ~~As a user, I would like to be quizzed to see if I am retaining the information taught to me on the app~~
      2. As a user, I would like for facts that I unlock to be narrated and accompanied with a picture if applicable (if time allows)
   6. Social
      1. As a user, I would like to share newly discovered elements, molecules and compounds with others (if time allows)

**Non-Functional**

1. Must be able to play this game on Android products
2. Must be able to play this game on Apple products (if time allows)
3. Must have an interface that is intuitive and easily navigable
4. Must have a database that is easy to maintain and extend for new content
5. Must not be too complicated that detracts from gameplay experience