**Updated Statement of Requirements**

***Functional Requirements:***

**Legend:** M = Must Have, S = Should Have, C = Could Have

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| **ID** | **Description** | **Notes** |
| UR\_ start\_screen | User shall select four options from the welcome screen (Start, Options, Credits, Quit) (M). |  |
| UR\_save\_ load\_quit | The user should be able to quit the game and have the level they have reached saved for when they load it again (M) | Close the game application to quit without saving. |
| UR\_select\_ level | User shall choose a level to play. (M) | Alternative: Complete games sequentially, restart when last level complete. |
| UR\_pause | User shall pause the game and bring up a menu with options (S) |  |
| UR\_ minigame | User shall refill water by completing the minigame which will prompt the user to rotate a series of pipes until they form a connection. (M) | The mini game can’t be too difficult as this would take away from the main game. |
| UR\_instruct\_ engines | User shall select and instruct their 2 fire engines - attack the enemy (3 fortresses) and move around. (M) | For this sprint of the game we are only implementing two fire engines and three enemy fortresses, which is less than required for the final game. |
| UR\_seeHUD | User shall see a HUD showing health and water (C) |  |
| UR\_enemy | User shall avoid alien patrols whilst playing the game (M) |  |
| UR\_end\_game\_ screen | User shall be notified when they win/lose a level, i.e. when the fortress is completely flooded, all firetrucks are destroyed/fire station is destroyed(M) | Alternative: automatically taken back to the fire station. |
| UR\_station\_refill | User shall be able to refill and repair Fire Trucks at the Fire Station (M) |  |
| UR\_refill\_ warning | User shall know when they are close to needing to refill or repair. (S) | Notification will not hinder the users ability to see enemies. Notification is via the values shown on screen. |
| UR\_strategy | User shall strategise how to manage and deploy their fire engines.(M) |  |
| UR\_attack\_ notification | User shall be notified when the fire station is about to be destroyed. (M) |  |
| UR\_interest | User shall be drawn in by the game, and not be bored. (M) |  |
| UR\_fresh\_ health | User shall be able to start each level with full health (C) | Alternative: they don’t and their health level continues on after each level. |
| UR\_ease | User shall be able to understand the game - be able to finish without being confused by mechanics. (M) |  |
| UR\_music | Play music in the menu state. (C) |  |
| UR\_collisions | The user shall not be able to pass through buildings and other objects, other than other firetrucks. Fire Trucks can pass through fire trucks. (S) | This is because it would make the game boring if the user could just go through obstacles. |

***Functional Requirements:***

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| **ID** | **Description and *User Requirement* it Links to** |
| FR\_display\_timer | System shall display a timer - countdown until aliens destroy the fire station. Show when timer is over. ***UR\_attack\_notification*** |
| FR\_auto\_save | Between levels user’s progress is recorded and data shall be saved locally on system. ***UR\_save\_load\_quit*** |
| FR\_pause\_inlevel | System shall be paused during play. This stops all movement of patrols and the timer. Menu pops up with options. ***UR\_pause*** |
| FR\_save\_quit | System shall be able to save user progress at the end of the level. We do not save their current state half-way through the level. If they quit the level half way through, they reset themselves upon that level upon revisiting. ***UR\_save\_load\_ quit*** |
| FR\_auto\_repair | Between levels damaged fire engines health are restored back to full automatically. ***UR\_fresh\_health*** |
| FR\_unique\_  engines | Fire engines have unique spec - Volume of water, speed, range, delivery rate, max health. ***UR\_strategy*** |
| FR\_unique\_  enemy | Enemies will have unique spec - defensive weapons, weapon damage, volume of water needed to flood. ***UR\_strategy*** |
| FR\_level\_  gimmicks | Levels shall be different to each other and intriguing. ***UR\_interest*** |
| FR\_engine\_fire | The user should be able to fire water at enemy patrols and fortresses. ***UR\_instruct\_engines*** |
| FR\_alien\_move | Aliens should be able to move between a set of positions along the screen. ***UR\_enemy*** |
| FR\_move\_towards\_station | Aliens should move towards the Fire Station after a certain amount of time. ***UR\_enemy*** |
| FR\_fortress\_recover | Fortresses should be able to recover health over time whilst not being attacked. ***UR\_instruct\_engines*** |
| FR\_enemies\_die | Enemies shall evaporate (disappear) when they come in contact with water and their health is zero. ***UR\_instruct\_ engines, UR\_enemy*** |
| FR\_engine\_destroyed | System shall notify the user when their fire engine is destroyed. ***UR\_seeHUD*** |
| FR\_no\_refill | Once the Fire Station has been destroyed, the user is no longer able to refill or repair their firetrucks. ***UR\_station\_refill*** |
| FR\_6\_levels | The game shall include 6 levels of increasing difficulty. ***UR\_select\_level*** |
| FR\_end\_game | User wins if they deplete the health of the enemy bases and complete the final level. User loses if all their fire engines are destroyed (all health levels are zero in a level), the fire station is destroyed or time runs out. ***UR\_ease*** |
| FR\_new\_level | The system shall take the user back to the level select screen when they have completed a level. ***UR\_end\_game\_screen*** |
| FR\_open\_minigame | When user reaches the refill tile (bottom left corner of the map) the system shall start the minigame. ***UR\_ minigame*** |
| FR\_minigame\_play | The user shall rotate the pipes by clicking on them. ***UR\_ minigame*** |
| FR\_minigame\_complete | The user completes the minigame if all the pipes are rotated correctly. ***UR\_ minigame*** |
| FR\_minigame\_outcome | The user shall only have their water refilled if they complete the minigame. ***UR\_ minigame*** |
| FR\_play\_music | The system should play the music when the game enters the menu state. ***UR\_music*** |
| FR\_deny\_collisions | The system shall stop the user from moving through obstacles other than fire trucks. ***UR\_collisions*** |
| FR\_game\_states | What is displayed on the screen and what the user can interact with is controlled by a game stack. The top of the stack is the current game state that the user is interacting with. **UR\_ start\_screen, UR\_save\_ load\_quit, UR\_select\_ level, UR\_pause, UR\_ minigame** |
| FR\_security | System should be able to store saved progress accurately. ***UR\_save\_load\_quit*** |
| FR\_precision | Fire trucks positions after being moved should have a small error margin. ***UR\_instruct\_engines*** |

***Non Functional Requirements:***

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| **ID** | **Description** | **Fit**  **Criteria** |
| NFR\_user\_ instructions | Instructions for the game should be available to the user. ***UR\_ease*** |  |
| NFR\_readability | Users shall be able to read any text easily. ***UR\_ease*** | Text legible from 5 metres away. |
| NFR\_menu\_ understandable | Users shall be able to navigate the menu without any prior experience. ***UR\_ease,* *UR\_startscreen*** | Buttons on the menu should operate in < 0.5 seconds. User taken to the next screen. |
| NFR\_artwork | Colour scheme and artwork should be fun and engaging. It shouldn’t hinder the users understanding of the game. ***UR\_interest*** |  |
| NFR\_user\_ interactions | User interactions with the game should be instant. No delay. ***UR\_instruct\_engines*** | User actions displayed within <1 second. |
| NFR\_error\_ prone | System shall not be broken by glitches. ***UR\_ease*** | 9/10 runs of the game should be free of glitches. |
| NFR\_main\_ focus | Mini game shouldn’t distract the user from the main objective of the game. ***UR\_minigame*** | Should take less than 5 minutes. |
| NFR\_ingame\_ warning | Warnings directed towards the user should be easy to understand and read. ***UR\_attack\_notification, UR\_refill\_ warning*** | Text legible from 5 metres away. |
| NFR\_buttons | All buttons should be labelled and have a known purpose to the user and be easily accessible. ***UR\_ease*** | Labels should be legible from 5 metres away. |
| NFR\_timer | User should be made aware when they have limited time left in the game. ***UR\_attack\_notification*** | Accuracy of timer should be +/- 0.25 seconds |
| NFR\_operators | System shall be operable by users with any level of gaming experience. ***UR\_ease*** | Clearly labelled with text legible from 5 metres away. Not technical language. |
| NFR\_audit | System shall keep saved files. ***UR\_save\_load\_quit*** | Keep these files for a day at least. |
| NFR\_resume\_ time | System should load a saved game. ***UR\_save\_load\_quit*** | Acceptable time of 5 seconds |
| NFR\_saved\_ content | Saved content will be data about the level that a particular user has reached. Saved content will not include where the user is up to in a particular level. **UR\_save\_ load\_quit** |  |