

EXPECT TURBULENCE

User Manual

Team WAW

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INTRODUCTION:

Welcome to Expect Turbulence, the new and improved air traffic control game from Team WAW! This user manual aims to give you the required information understand play the game. We will give you a brief overview of the game and explain the controls, concepts and features of the game.

The game is based upon the role of an Air Traffic Control Officer where you are tasked with controlling multiple aircraft as they travel through your designated airspace. The objective is to guide the aircraft through their assigned waypoints and out of their given exit point all while avoiding collisions with other aircraft. Additionally, you are in-control of at least one regional airport and have to ensure that all flights safely take off and land.

If you have any further questions, feedback or comments feel free to contact the development team below.

Thanks, and have fun!

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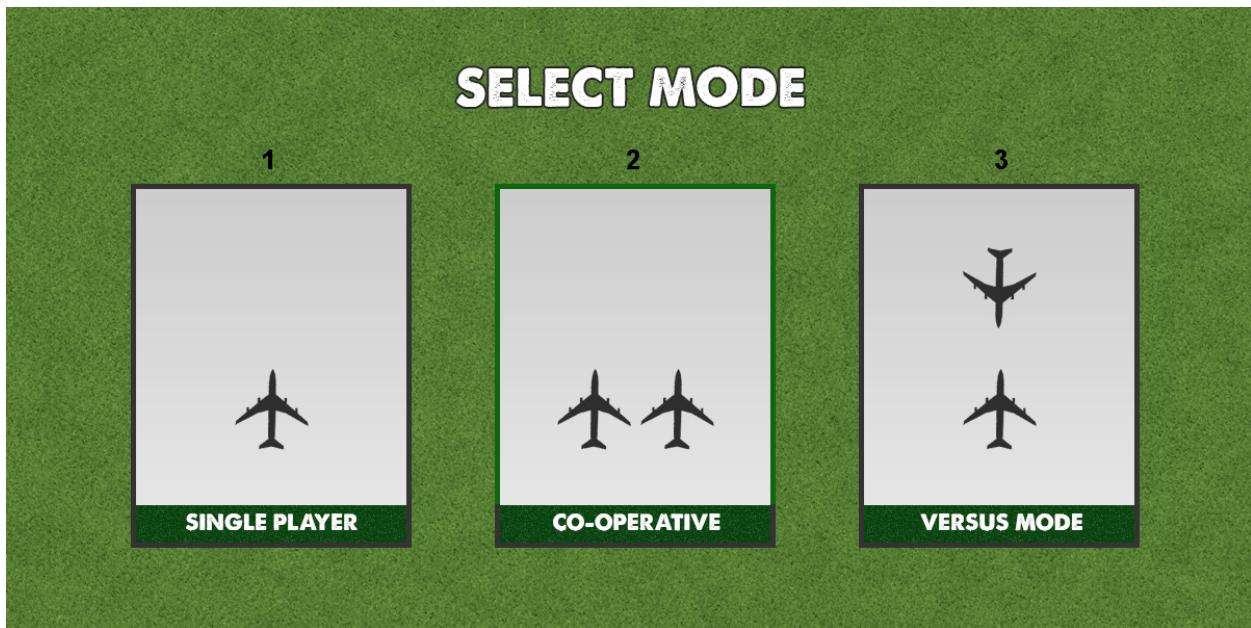
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MENU NAVIGATION - MAIN MENU



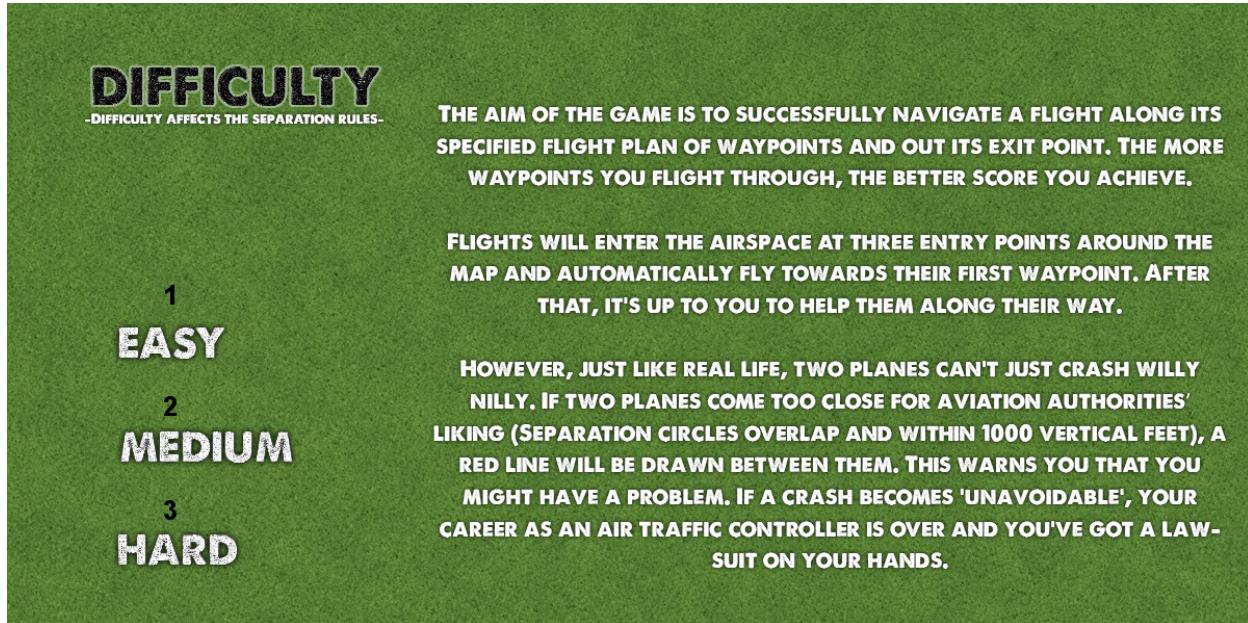
- (1) - The 'CREDITS' option will display the licensing information for various assets in the game
- (2) - The 'HIGH SCORES' option will display the global highscores leaderboard screen
- (3) - The 'CONTROLS' option will display a brief description of the games primary controls
- (4) - The 'ACHIEVEMENTS' option will display a list of locked and gained achievements
- (5) - The 'QUIT' option will exit the game
- (6) - The 'PLAY' option will advance the game to the 'SELECT MODE' screen

MENU NAVIGATION - SELECT MODE



- (1) - The 'SINGLE PLAYER' option will enter the game into single player mode
 - In this mode you are the only player, you have control over all of the aircraft in the airspace and your primary objective is to gain as much score as possible by directing flights through their waypoints and through their designated exit points.
- (2) - The 'CO-OPERATIVE' option will enter the game into co-operative mode
 - In this mode you are playing along side another player, with control over an even number of flights. The primary objective is the same as in single player, and the same separation and collision rules apply. However, you can now pass flights over to the other player so teamwork is key!
- (3) - The 'VERSUS MODE' option will enter the game into versus mode
 - In this mode you are playing against another player, with the primary objective to have a higher score than your adversary after the 5 minute time limit has elapsed. You gain score by collecting the golden cargo and landing your aircraft at the airport. In this mode planes can crash without consequence, so try to sabotage the other players landing attempts to win!

MENU NAVIGATION - DIFFICULTY SELECT



(1) - The 'EASY' option will enter the game into the easiest level of difficulty

- In this mode the rate at which planes enter the airspace will be at the lowest and the separation rules are greatly reduced, allowing planes to fly closer to each other without generating warnings.

(2) - The 'MEDIUM' option will enter the game into the medium level of difficulty

- In this mode the rate at which planes enter the airspace is increased slightly and the separation rules are more stringent.

(3) - The 'HARD' option will enter the game into the hardest level of difficulty

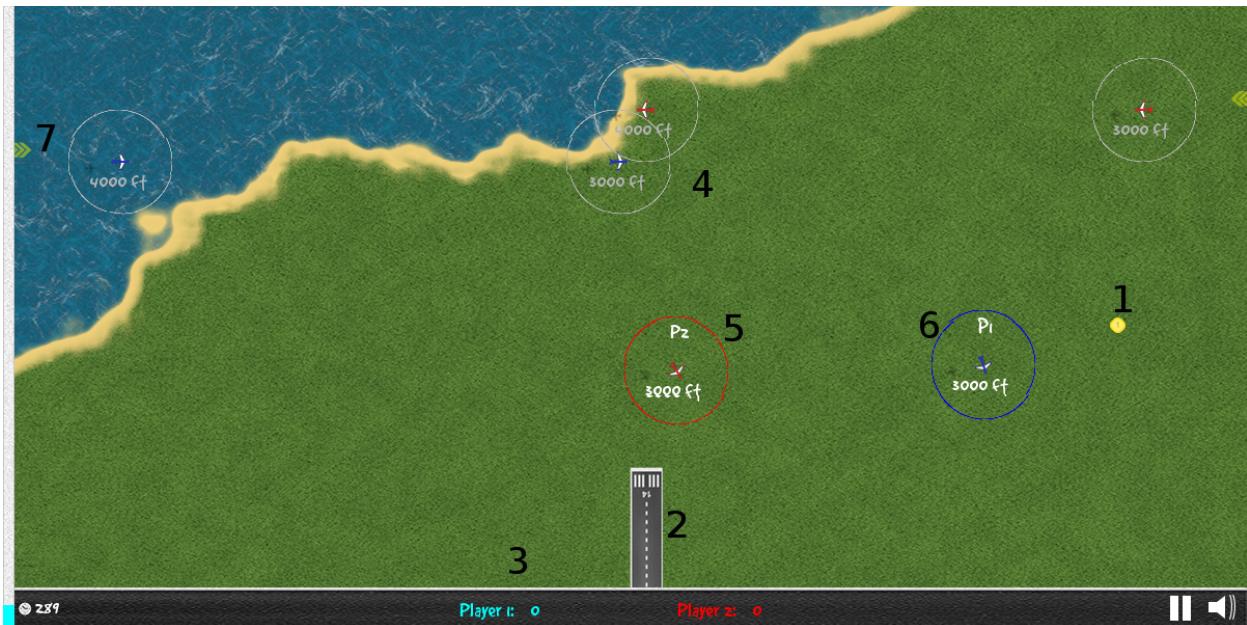
- In this mode you will be up against the highest rate of entry for aircraft in the airspace, the separation rules are at their largest so planes will have to be given a wide berth to avoid ending the game. Additionally the randomly occurring 'events' are a lot more severe.

INTERFACE GUIDE - SINGLEPLAYER & CO-OPERATIVE



- (1) - One of two runways from which aircraft can take off and land
- (2) - The landing zone where aircraft must line up at 2000 ft to land
- (3) - The elapsed time and score
- (4) - The notification area where important information is displayed
- (5) - The pause and mute music buttons
- (6) - A hunter flight, one of the random events
- (7) - The volcano, one of the random events
- (8) - A molten rock, spewed out by the volcano when it erupts
- (9) - A waypoint
- (10) - A deselected aircraft
- (11) - The selected aircraft, with its altitude, speed and direction controls
- (12) - An exit point
- (13) - An entry point

INTERFACE GUIDE - VERSUS MODE



- (1) - The **cargo**, the primary objective of the mode
- (2) - The **runway** where you must land your aircraft with cargo onboard to score a point
- (3) - Player 1's current score
- (4) - **Unselected** planes for both player 1 and player 2
- (5) - A **selected** flight for player 2
- (6) - A **selected** flight for player 1
- (7) - An **entry point**

SYSTEMS EXPLANATION - GAMEPLAY

Single Player & Co-operative:

The game begins with an empty airspace, a score of zero, a timer at 00:00, and a multiplier of one. Immediately after, a plane either enters the airspace or appears at one of the airports. The user will have to make sure the planes will follow their flight plans and leave the airspace successfully either through an exit point or by landing. Planes will keep appearing at specific intervals, so the game becomes gradually harder.

By double clicking on one of the flights, the player can enter the flight plan change mode which allows them to adjust the flight plan of the selected flight to their liking, at the cost of some of their score. However, this allows them to more tactically route flights well away from each other and create optimal routes from an aircraft's entry point to its exit point.

During the game, random events such as a volcano eruption, tornados and bonus flights will occur that the player will have to react to to gain bonus points or avoid score loss.

The game ends when two planes enter violate the separation rules to an extent such that a collision is unavoidable. At this point the user will be prompted with a game over screen along with the score they obtained.

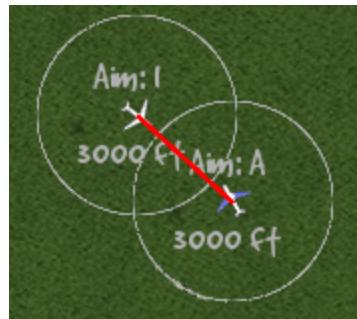
In cooperative mode, the available aircraft are split between the two players who must work together to achieve the same objectives with the same restrictions and rules as single player.

Multiplayer - Versus

In this mode the two players are pitted against each other in head to head competition. The objective is to fly into the cargo which will appear in the airspace and return it to the single runway to deliver it. This will grant the successful player a single point and the winner is the player with the most points after the five minute timer has elapsed. In this mode the separation rules are not active, allowing players to sabotage each other by deliberately causing collisions!

SYSTEMS EXPLANATION - SEPARATION RULES

The objective of the game is to successfully navigate planes through the airspace while avoiding other aircraft. You can detect an imminent collision via the separation warning line that is drawn between two aircraft that are flying too close.



Separation warning for flights flying too close

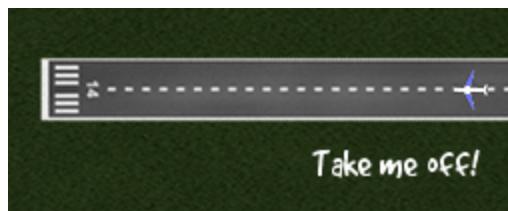
The **separation warning** occurs when two aircraft fly too close while being vertically less than 1000ft from each other.

If two flights continue to fly too close to each other then they may be involved in a collision and it's **game over!**

SYSTEMS EXPLANATIONS - TAKE-OFF & LANDING

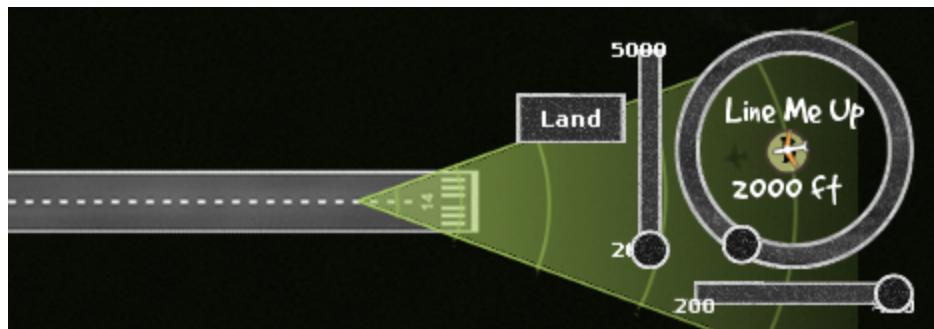
One of the key elements of *Expect Turbulence* is the ability for aircraft to enter and exit the airspace via airports.

To give a flight permission to **take off**, first select the flight and then **right click** the take off button, the flight will immediately begin to take-off. The flight will roll down to the end before gradually gaining altitude. You are unable to issue the flight commands until it has fully completed its take off roll.



A plane waiting at the airport, requesting permission to take-off

Additionally, aircraft can request permission to **land** at your airport. You can tell ahead of time which flights will want to land by selecting a flight and looking at its allotted waypoints, if its exit point is shown at the end of the runway then the flight will want to land when it has completed its other waypoints.



A plane on its final approach

When an aircraft has requested permission to land you will need to command it to reduce its altitude to 2000ft, once it has reached this altitude you will be able to manually control the aircraft into the green **landing zone** and **right click** on the land button to land the aircraft. The flight will then automatically reduce its altitude and land at the airport.

SYSTEMS EXPLANATION - RANDOM EVENTS

During the course of both single player and cooperative games there will be events that occasionally occur that will interfere with flights in the airspace. The effect of these events are described below:

Volcano:

The player will receive a warning in the notification area just before the volcano is about to erupt, when it does erupt it will spew out molten rocks that will fly in all directions. Make sure to route flights around the rocks to avoid disaster! Be aware that the rocks will collide with a flight at any altitude.



Hunter Flight:

When the hunter flight enters the airspace it will ‘lock on’ to one of the player controlled flights and slowly flies towards it in an attempt to intercept and cause a crash! A hunter flight will match any altitude that a flight uses to try and avoid it so make sure to change direction and speed to shake it off!



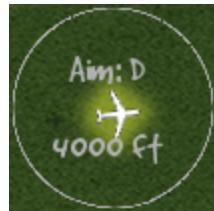
Tornado:

A tornado is a fast moving event that will sporadically change direction around the airspace. When a flight comes into close contact with the tornado it will be rapidly spun round and released after a short amount of time at a random altitude and pointing a random direction, not ideal when coming in for a landing!



Bonus Plane:

The bonus plane is the only ‘positive’ event in the game. When a bonus plane, denoted by a yellow glow around it, completes its objectives it will grant the player extra points.



SYSTEMS EXPLANATION - SCORING

As you play the game you will accumulate score as you accomplish goals. The score is displayed in the bottom left of the game area and is a total of all the points you have achieved up until that point. Secondly, the score **multiplier** is displayed as the bar that fills up on the right hand side. When the bar reaches the top of the screen it resets and the multiplier is increased by one. The multiplier is multiplied by the score that you gain for each action, so having a high multiplier can rapidly increase your score!

Actions that increase your score:

- Flying through a flights next waypoint, as defined by the flight plan:
 - If the flight is within 10 pixels of the waypoint: $+100 * \text{multiplier}$
 - If the flight is within 20 pixels of the waypoint: $+ 50 * \text{multiplier}$
 - If the flight is within 40 pixels of the waypoint $+ 20 * \text{multiplier}$
- For every minute that the game is running: $60 * \text{multiplier}$

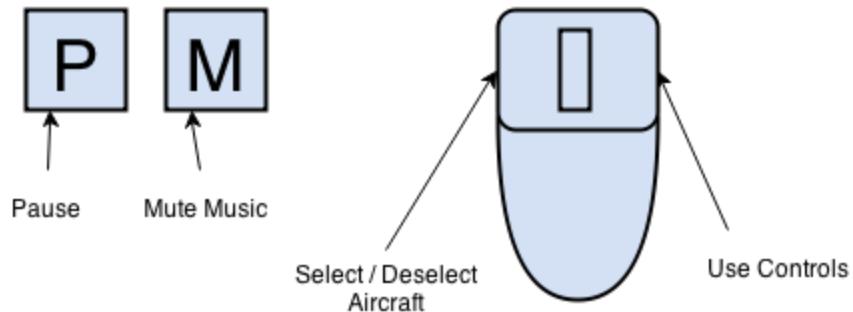
Actions that will reduce your score:

- Changing a flights flight plan: -10
- If a flight leaves the airspace without completing its designated flight plan: -1 multiplier and -50 points

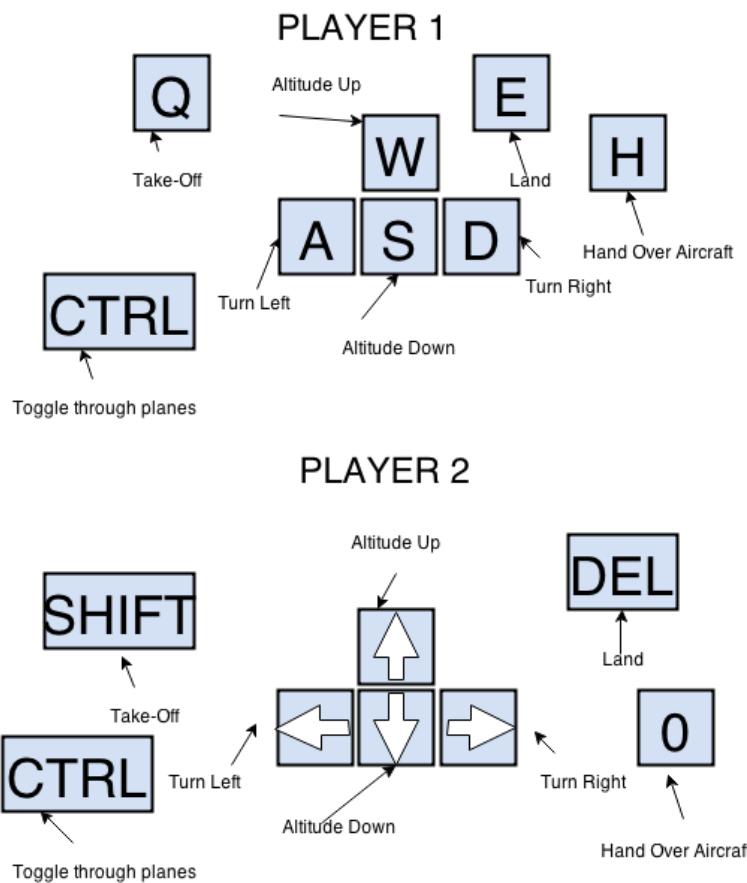
CONTROLS

Single Player:

Toggle through planes



Multiplayer:



Expect Turbulence – Team WAW

GLOSSARY

Airspace - The visible area within the game window.

Plane - Entity to be directed through your airspace, planes will appear white when selected.

Flightplan - The set of waypoints that a plane must pass through before it can leave the airspace.

Altitude - The current height of the plane.

Waypoint - Locations within the airspace (window) that a plane must pass through before it is allowed to leave the airspace. A plane's next waypoint will appear white when the plane is selected.

Exit Waypoint (Exit Point) - The terminal waypoint in a plane's flightplan.

A plane will leave once it reaches its exit point. The plane's exit point (if no other waypoints remain) will appear green when the plane is selected.

Collision and Separation Boundaries: When planes within a certain distance to each other, the radial warnings will be displayed, highlighting the minimum distance two planes may operate between another (in red). When planes pass too close to each other they are considered to have violated separation distance, and the game ends.

CREDITS & ACKNOWLEDGEMENTS

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ASSET LICENCES

Music:

Beachfront Celebration by Kevin MacLeod (incompetech.com)
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Images:

Loading screen plane created by Sallee Design
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A love of thunder
Downloaded from DaFont
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