Devlog Flight Simulator

How does flight physics work and how do you implement it in a game.

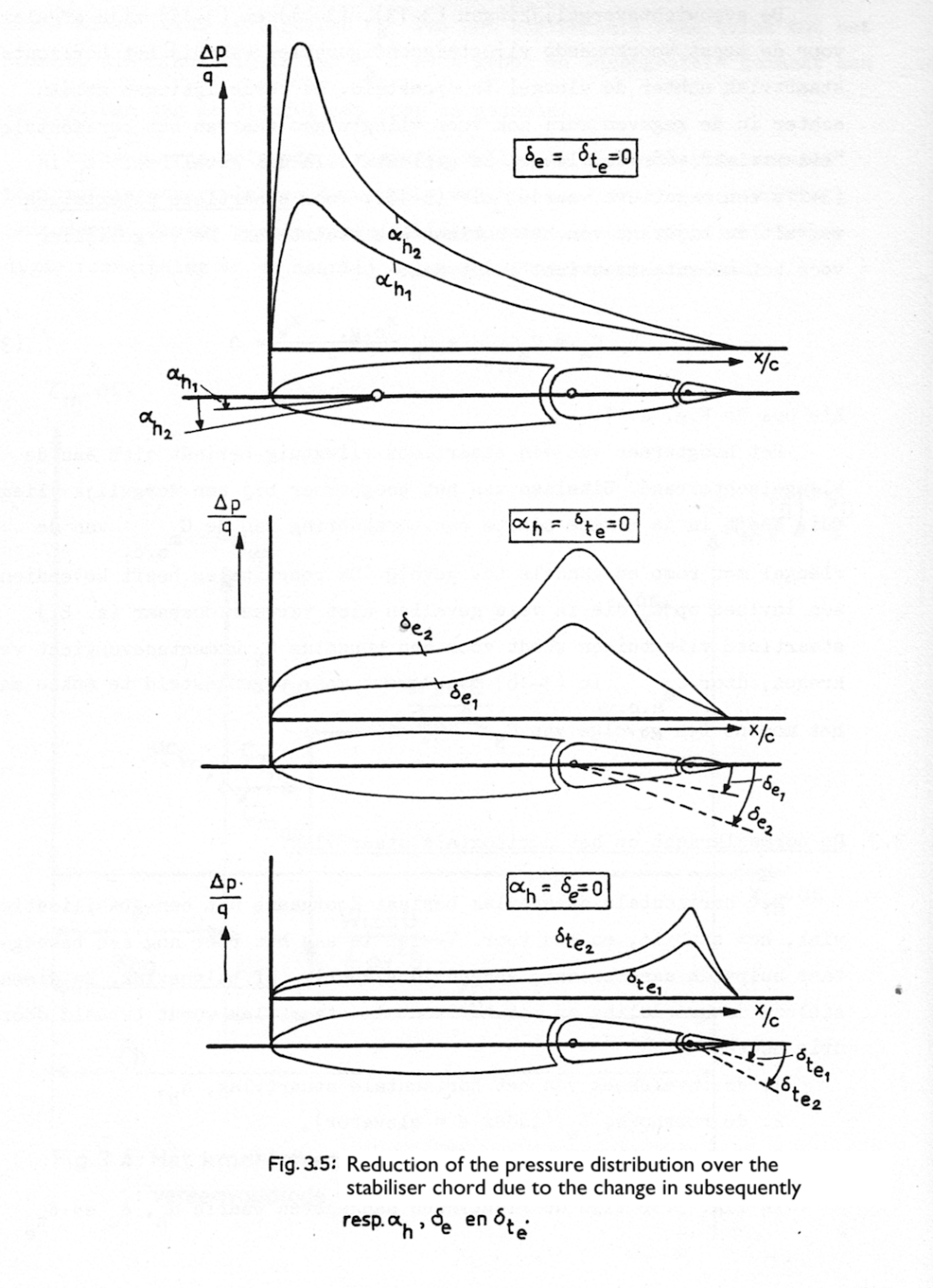


Table of Contents

[Introduction 3](#_Toc199954403)

[Why am I doing this? 3](#_Toc199954404)

[What is this document? 3](#_Toc199954405)

# Introduction

## Why am I doing this?

For my course Personal Branding & Portfolio I have decided to try and create a flight simulator with real-time realistic physics.

I have in the past 2 years really come to like a game called WarThunder, where you can fly, drive and control multiple forms of vehicles used in a military setting, the vehicles ranging from the biplanes of the inter-bellum to the iconic M1 Abrams MBT from the cold war times.

The game consists mainly of 3 different modes: Arcade, Realistic and Simulator. The mode that I currently play the most frequent is Simulator mode. This is due to the way that you have the realism of the mechanics; flat spins, wing stall, the need to trim and the overall scale, while still maintaining the casual playstyle due to not having to know the entire startup sequence of that vehicle, unlike a game such as DCS for example, where you have to memorize the entire start-up sequence, which can take up to 5 minutes at times. My main vehicle type that I have interest in is as you might have been able to guess by the title of the document, planes.

I have had quiet an interest in the physics principals behind flight, and even more how that is implemented in games. Therefore, since starting the study CMGT, I’ve wanted to try and create my own flight simulator, even if just purely as a simulator, and not specifically a game with a play loop and all else that’s necessary for a game.

## How will I do this?

The project is made out of two parts, both targeting one of my learning goals from this project.

The first part is research into general flight physics, as well as how it’s implemented in other solutions/games. Questions can be, but are not limited to; What is the formula for lift, drag, thrust and gravity? How do certain properties of a wing, engine, fuselage change the overall characteristics of the plane they are a part of? How do well known games implement the physics? If they simplified a formula or system, how and why? How could I best go about implementing the systems and physics? How would I go about designing the systems and simulator to be able to expand it in the future? If possible, how were a few planes designed, what was kept in mind or focused on?[[1]](#footnote-1)

The second part of the project is the actual making of the simulator. I will be making use of the Unity Engine. This will most likely be the main part of the Dev-log, as it will be the part of the project where I will run into the most situations where I have to make choices, try to solve issues that come up during development for whatever reason. And generally, the easier part to reflect and log as it’s actual development, instead of just writing stuff down on a piece of paper or in a document.

## What is this document?

This document will act as both my research results/findings, as well as the dev-log for the development side of the project. I will start with a research section where I

1. This question is mainly something for if I have time and am able to easily find information on it, as it’s more a question out of interest then necessity. [↑](#footnote-ref-1)