Tender Response Proposal

From

EPITOME SOFTWARE.

Mobile Application

TAKE OFF!

Royal Air Force Benevolent Fund

CONTENTS

EPITOME SOFTWARE – ABOUT US

Figure 1 Small version of the logo of Epitome Software.

Epitome Software is an independent game development studio that has been founded in 2014 by two game development graduates from Bournemouth University. Over the course of nearly six years of service, Epitome Software has grown to eight staff members from the initial two, which include three developers and two artists. We have also established a network of tried and trusted freelancers with varying skills that have satisfyingly, reliably and successfully supported us in many of our projects so far.

During that time, our company has amassed extensive experience in the development of mobile applications for Android and iOS, especially in the field of education and utility apps. Most of the commissioned software on our track record has been programmed using the Unity game engine and the C# language, however we are also knowledgeable with the game engine known as Unreal Engine 4 and the C++ language. To compile and code in both of these programming languages, the Visual Studio IDE is used by our developers. Our artists use Blender for 3D modelling and animation, and tools from the Adobe Creative Cloud, such as Photoshop, for texturing and 2D graphics.

Taking all of this into consideration, it is understandable that although Epitome Software can be considered a small size game development studio, the success to date of our development leads to a prediction that our company will have at least three live projects running at any time from May 2020 until the beginning of March 2021.

Our current office is based nearby the Tower Park, Bournemouth, which is 223 miles away from Lincoln, and 107 miles away from London (around 4 hours of driving and 2 hours of driving, respectively).

1 PRODUCT SPECIFICATION AND FEATURES

1.1 OVERVIEW

Take Off! will be developed in Unity as a free to play game, without any advertisements, and will be released on iOS versions 12 and above, as well as Android version 6.0 Marshmallow and above to ensure compatibility with legacy operating systems. The main application will act as a hub, from which the user will be able to open various game modes and features included. The progress of a player will be stored on user's Google Play Games or Apple Game Center account. Upon opening the application, the player will be asked for his age and the consent for collecting and using data metrics. If the user is above the age of 18, a donation button will be shown at the bottom of the screen. Both of these will be changeable afterwards.

Figure 2 Main menu of the application for mature audience.

1.2 CUSTOMER ENGAGEMENT

To increase interest in the application, a closed beta version will be released. Access to it will be available by either donating a set amount to RAFBF or by following the social media activity of RAFBF and its partners, as posts with access codes will be periodically released. These posts can possibly be made by a highly reputed and previously used by us freelance digital marketing agency if needed.

In these closed beta versions, surveys will be taken from players to see if it meets expectations and whether it is satisfying to play. The surveys will ask whether the user played any other aircraft simulation games, such as *War Thunder, Flight Simulator X, World of Airplanes*, and if so, questions will be made whether do they believe that the airplanes behave as expected. This will help improve the quality of the game and improve the connection between the developers, RAFBF and the target audience.

The game will also be showcased on commemorative events such as the Battle of Britain Day.

Figure 3 Example of a possible social media closed beta key giveaway.

1.3 KEY FEATURES

Key Feature	RAFBF Information - Unlockables
Implementation of the Feature	A full description about the RAFBF and its history will be provided as a free unlockable, and a shortened description will be shown when an adult user clicks on the donation button before the payment. The game will use a lot of videos from the RAFBF and its partners, the BBMF and Red Arrows, which will be used as unlockables for player's progression throughout the application's game modes. This is in order to have a pursuable goal for players. To keep the size of the application to a minimum, the videos will be published on YouTube as unlisted videos, therefore being streamed to the user instead of being downloaded. The videos provided will also be edited into smaller parts with the most interesting moments. The types of videos used as unlockables will be: • Videos with ex-service men and women that used to fly the in-game airplanes (Avro Lancaster, BAE Systems Hawk, Hawker Hurricane, Supermarine Spitfire) as unlockables for flying each of the airplanes and learning their internal parts in the Cutaway quiz. • Videos involving Red Arrows aerobatic in-air tricks, used as Pilot Challenge game mode. • Videos involving the battle between the Royal Air Force and the Luftwaffe during the Battle of Britain, used as Battle of Britain Day Revisited game mode unlockables. • Videos with ex-service men and women that used to fly any Royal Air Force airplanes (not limited to the ones in game) during the second World War, used as general type unlockables. • Videos and information involving RAFBF's help and its history, also used as general type unlockables.
Tools, Software and Resources	The video editing tools will be the freelancer's choice. The videos will be provided by the RAFBF and its partners.
Staff Responsible	Programming: Junior Developer 1 Video editing: Freelance videography company
Estimated Time Needed	Video editing and processing – 4 days Programming – 2 days

Key Feature	2D Game – Pilot Challenge
Implementation of the Feature	The game will consist of five different courses, with each increasing in difficulty. Each course will be a three lap timed race with pylon checkpoints, based over satellite images of a water bank or land. The player will start with a small amount of time left to reach the next checkpoint. For each checkpoint hit, the time left for the player will be extended by a set amount. If the player successfully finishes the race, the time still left will be his score from this race and stored on a leader board. Although the player will be possible to skip or miss a pylon checkpoint and just move onto the next one, he will not receive any time extension for doing so. If he runs out of time, the plane will run out of fuel and an animation will play out of the pilot jumping out of the plane, and the plane crashing downwards. The game will use realistic aerodynamic physics which will accurately represent each of the in-game airplanes with its technicalities, such as manoeuvrability or speed. A g-force blackout mechanic will be implemented. If a player exaggerated with his manoeuvres over a maximum g-force resistance, the screen will turn black for a set amount of seconds before turning back to normal. The player will be able to increase his score during the race by performing various manoeuvres, such as a barrel roll. Doing so will display an information on the in-game HUD. The player will be able to control the airplane with virtual joystick controls shown on-screen. 2D models and animation for each of the airplanes (Avro Lancaster, Hawker Hurricane, Supermarine Spitfire, BAE Hawk) will be created, as well as sound effects and game music.
Tools, Software and Resources	Unity and Visual Studio will be used to develop and program this feature. Applications from Adobe Creative Cloud for 2D models and animations will be used. The music/sound production tools will be the freelancer's choice. Audacity will be used for audio mixing.
Staff Responsible	Programming: Lead Developer Junior Developer 1 Junior Developer 2

	HUD, 2D models and textures: 2D Artist and GUI Designer Audio mixing: Audio Engineer Sounds and music: Freelance Composer/Sound Designer
Estimated Time Needed	Assets – 14 days Sounds and music – 4 days Programming – 7 days

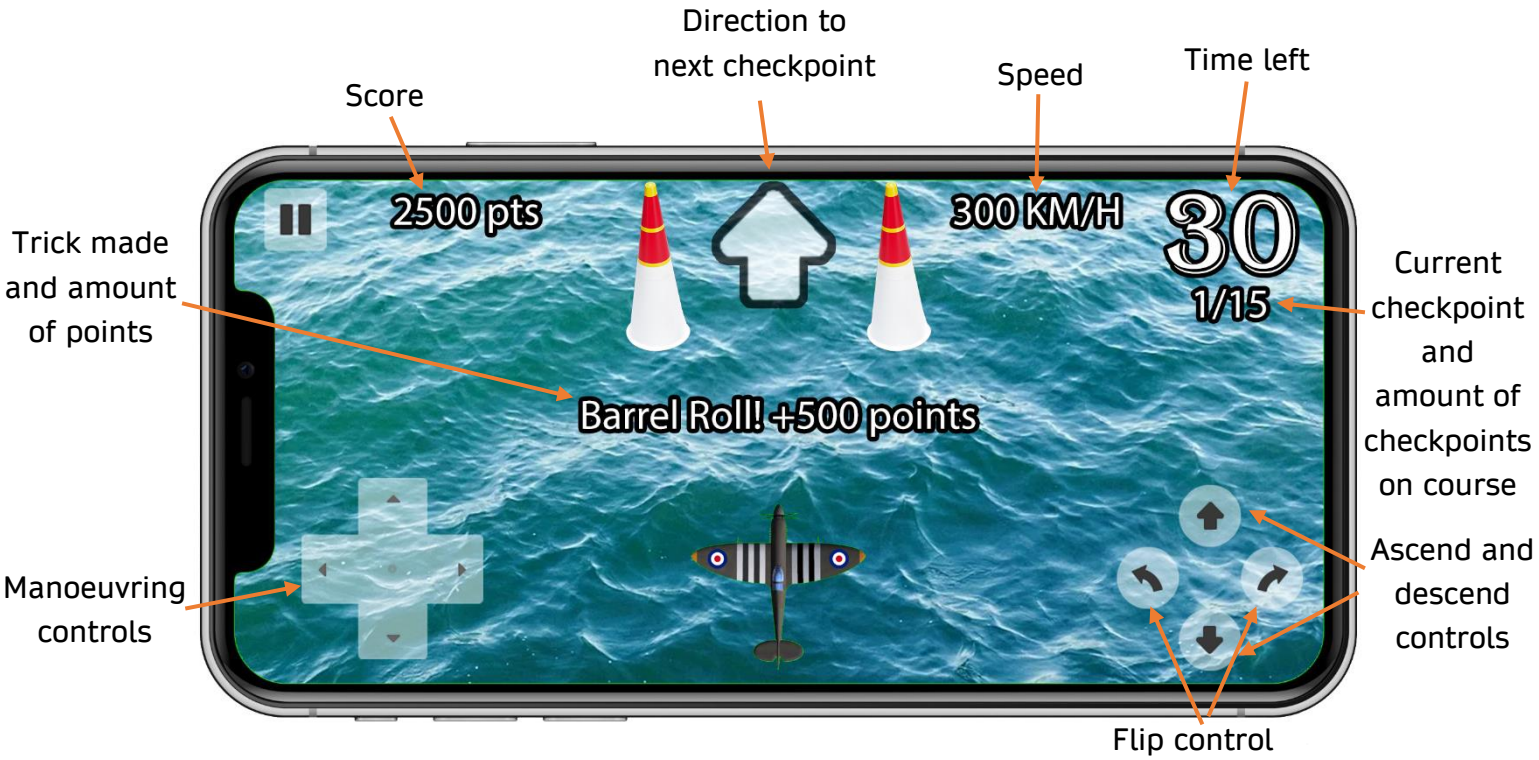


Figure 4 Pilot Challenge.

Key Feature	3D Aircraft Models
Implementation of the Feature	A 3D model of each in-game airplane (Avro Lancaster, BAE Systems Hawk, Hawker Hurricane, Supermarine Spitfire) will be created from technical sheets provided by the RAFBF. Textures will also be created. The models will be animated. The animation made would be events such as the engine wing spinning, wings flapping, machine guns shooting. Each of the airplanes will also have unique sounds of the engine, wing spinning, flaps and machine gun firing.
Tools, Software and Resources	Blender will be used to create and animate the models. Audacity will be used for audio mixing. The sound production tools will be the freelancer's choice.
Staff Responsible	Models and animation: 3D Artist and Modeller Textures: 2D Artist and GUI Designer Audio mixing: Audio Engineer Sounds: Freelance Composer/Sound Designer
Estimated Time Needed	Models – 28 days Sounds – 4 days Textures – 3 days

Key Feature	Aircraft Cutaways
Implementation of the Feature	Each of the 3D airplane models will be used to create cutaway models for the player. These cutaway models will contain around 50 data points each, with all of them being provided by technical sheets from the RAFBF. A quiz game will be made with three increasing difficulty settings using these cutaways, allowing the player to memorise the construction of a chosen airplane, in which a player will have to find and tap on the part. An inspect mode with a search tool will also be implemented to allow the player to see where each part is located. The cutaways will also be rotatable and available to send to a printer from the smartphone or to convert and save to a PDF file for printing with the data points shown or not. Sounds for the quiz game and an ambient music track will be created.
Tools, Software and Resources	Unity and Visual Studio will be used to develop and program this feature. Blender will be used to create and animate the models. Audacity will be used for audio mixing. The music/sound production tools will be the freelancer's choice.
Staff Responsible	Programming: Lead Developer Junior Developer 1 Junior Developer 2 3D Artist and Modeller HUD: 2D Artist and GUI Designer Audio mixing: Audio Engineer Sounds and music: Freelance Composer/Sound Designer
Estimated Time Needed	Assets – 28 days Sounds and music – 3 days Programming – 7 days

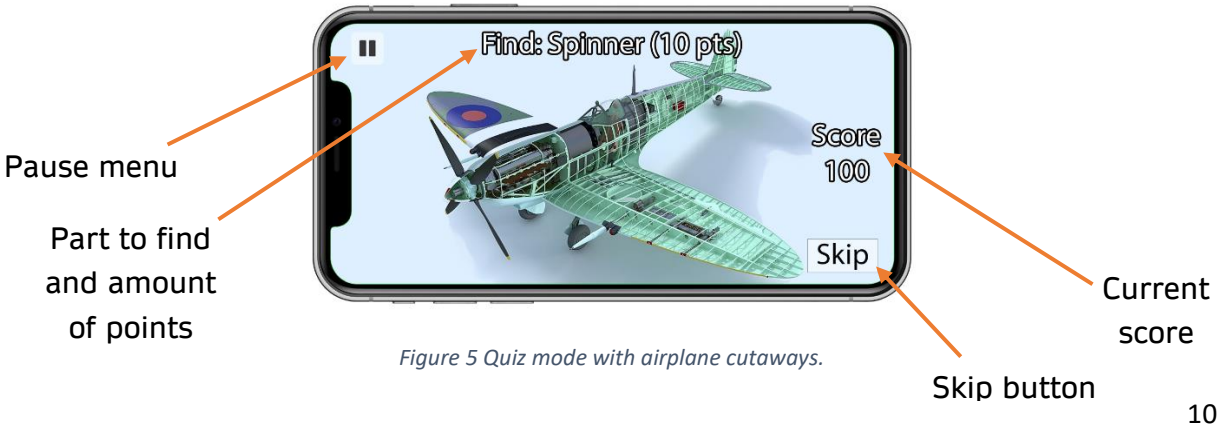


Figure 5 Quiz mode with airplane cutaways.

<table>
<tr><th>Key Feature</th><th>App Metrics</th></tr>
<tr><td>Implementation of the Feature</td><td>The player will be asked at the first run whether he consents to his data being anonymously collected and used by Epitome Software and the RAFBF. The data will be uploaded from the app every 30 minutes to a SQL database hosted on a server.

The stored metrics will be as shown below, ranked from one of the highest importance (in the belief of our company) to the one of lowest:
<table>
<tr><th>Metric</th><th>Benefit to RAFBF</th></tr>
<tr><td>Amount of mature players that have donated</td><td>Shows how many mature players of Take Off! have decided to donate to RAFBF after playing the game, therefore showing how well the development Take Off! has accomplished its goal.</td></tr>
<tr><td>Favourite airplane overall and in each game mode</td><td>Shows which airplane out of the four is the players' favourite, also dividing the data into the categories of speed air racing, aircraft fights and education, which can be a possible direction for future advertising of the RAFBF.</td></tr>
<tr><td>Most viewed unlockables</td><td>Shows which videos have been viewed the most, which can be a possible direction for future advertising of the RAFBF.</td></tr>
<tr><td>Age of the player</td><td>Shows the age groups of the players, which can be a possible direction for future advertising of the RAFBF.</td></tr>
<tr><td>Time spent playing the game and each game mode</td><td>Shows how long Take Off! keeps the players interested. It also shows which game mode is their favourite, again dividing the data into the categories of speed air racing, aircraft fights and education, which can be a possible direction for future advertising of the RAFBF.</td></tr>
<tr><td>Unlock progress of each unlockable type</td><td>Shows a possible indication of unlockables of which type the players decide to pursue first in unlocking, again dividing the data into the categories of speed air racing, aircraft fights and education, which can be a possible direction for future advertising of the RAFBF.</td></tr>
</table></td></tr>
<tr><td>Tools, Software and Resources</td><td>Unity and Visual Studio will be used to develop and program this feature.</td></tr>
<tr><td>Staff Responsible</td><td>Junior Developer 1</td></tr>
<tr><td>Estimated Time Needed</td><td>Programming – 4 days</td></tr>
</table>

1.4 ADDITIONAL FEATURES

Key Feature	Experience System
Implementation of the Feature	The player will collect four different experience levels: • General Experience, which is the total of the experience collected (the other types summed up). • Pilot Challenge Experience, which is the experience collected for playing the Pilot Challenge game mode. • Battle of Britain Day Revisited Experience, which is the experience collected for playing the Battle of Britain Day Revisited game mode. • Airplane Flying Experience, which is collected for flying the airplanes, and is collected separately for each of the airplanes. By playing more and more of each game mode and flying each airplane, the player will be able to unlock videos of related type.
Justification	Collecting experience will give a sense of progression in the game, and unlocking videos will provide a goal for the game for the players to pursue in order to keep the players interested in the game for longer.
Tools, Software and Resources	Unity and Visual Studio will be used to develop and program this feature.
Staff Responsible	Programming: Junior Developer 1 Junior Developer 2
Estimated Time Needed	Programming – 3 days

Key Feature	AiRplane – Augmented Reality Airplane
Implementation of the Feature	An Augmented Reality game mode will be implemented, which will allow the player to bring a chosen airplane to life using the external camera of the device. Using swipe controls and/or tapping the airplane, the player will be able to interact with the airplane in various possible scenarios, such as: starting its engine, making it take off, making it perform tricks such as barrel rolls etc. This will allow the player to investigate the airplane closely as well.
Justification	AR is one of the current mobile trends. By implementing it as a feature into the application, it should raise the popularity of the application. A player using this feature can show it to his friends and raise the potential player base.
Tools, Software and Resources	Unity and Visual Studio will be used to develop and program this feature.
Staff Responsible	Programming: Lead Developer Junior Developer 2
Estimated Time Needed	Programming – 7 days

Figure 6 AiRplane feature.

Key Feature	2D Game – Battle of Britain Day Revisited
Implementation of the Feature	The game will be similar in gameplay to *Space Invaders*, and will base on the player defending current day London with his chosen airplane from the Luftwaffe forces. Each airplane will have similar weaponry to balance the gameplay. The game will be controlled by tapping or swiping on the lower part of the screen to control the airplane. There will be three difficulty settings to choose from with randomly generated waves of four possible Luftwaffe airplanes: the Messerschmitt Bf109, Messerschmitt Bf110C, Junkers Ju87 Stuka, Junkers Ju88 and Heinkel He111. These will be created as 2D models with simple animation. The background of the game will consist of satellite images of current day London. The player will be also able to start the game from a chosen address in London. Sounds for the airplanes and three different music tracks will be created.
Justification	Another game mode will add gameplay value to the application. It will also bring a historic appeal to players.
Tools, Software and Resources	Unity and Visual Studio will be used to develop and program this feature. Applications from Adobe Creative Cloud for 2D models and animations will be used. The music/sound production tools will be the freelancer's choice. Audacity will be used for audio mixing.
Staff Responsible	Programming: Lead Developer Junior Developer 1 Junior Developer 2 HUD, 2D models and textures: 2D Artist and GUI Designer Audio mixing: Audio Engineer Sounds and music: Freelance Composer/Sound Designer
Estimated Time Needed	Assets – 14 days Sounds and music – 5 days Programming – 7 days

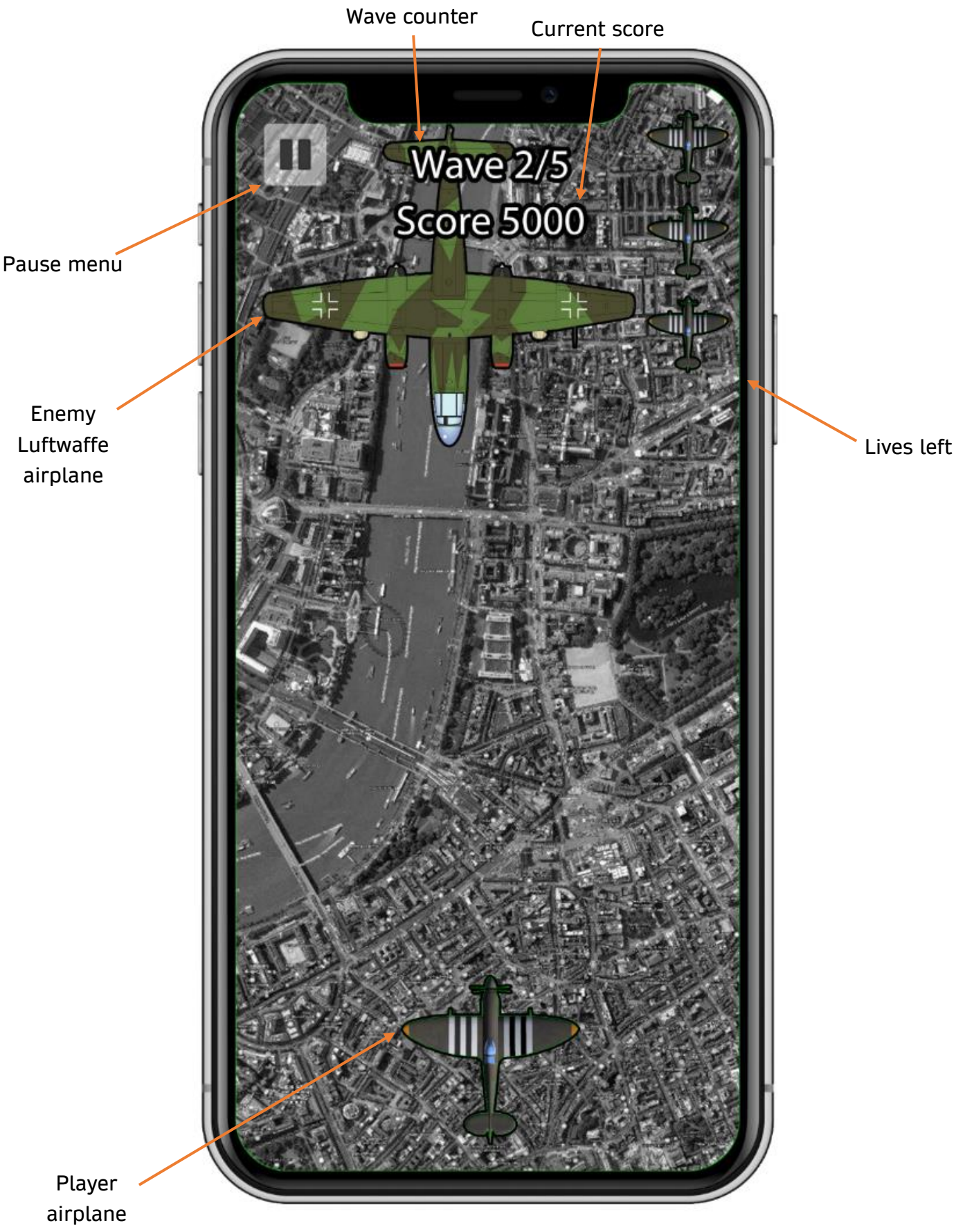


Figure 7 Battle of Britain Day Revisited game.

Key Feature	Airplane Customizable Showcase
Implementation of the Feature	The player will be able to customize a chosen airplane's colour scheme with their own choosing, as well as painting emblems onto the airplane, either from the game's collection or by uploading an image file. By doing so the player will be able to fly the customized airplane in the other game modes.
Justification	This feature will make the players feel more attached to the game, as they will be able to have and fly their own creations in game.
Tools, Software and Resources	Unity and Visual Studio will be used to develop and program this feature. Applications from Adobe Creative Cloud for emblems will be used.
Staff Responsible	Programming: Junior Developer 2 2D Artist and GUI Designer
Estimated Time Needed	Assets – 3 days Programming – 3 days

2 PRODUCT DEVELOPMENT PLAN

2.1 WORK BREAKDOWN STRUCTURE

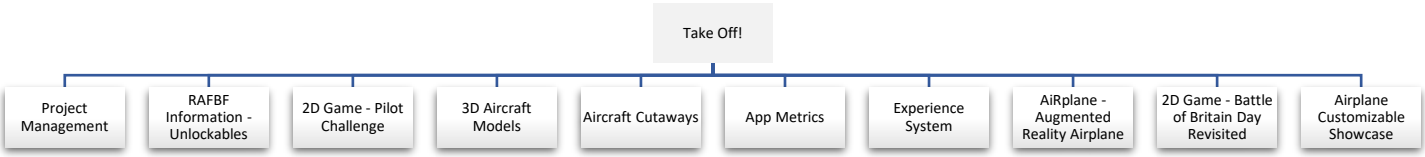


Figure 8 The Top Level Themes of Take Off!

A work breakdown structure has been created to identify and correctly estimate the time and cost of each possible task in the key features specified in the tender, as well as any proposed additional features. As the key and additional features are major parts of the project, and most of them do not depend on the progress of each other, a decision has been made to establish them as the Top Level Themes, with *Project Management* being the control theme for the rest of the themes, designing, evaluating and controlling the progress of each key feature. Each of the lower levels of the themes consists of smaller tasks that all together make up the final feature in the application.

2.2 COST ESTIMATION

Cost Planning Sheet

Nr	Key feature	Internal cost	Freelance cost	Total (£)
1	Project Management	£ 13,733.14	£ -	£ 13,733.14
2	RAFBF Information - Unlockables	£ 223.75	£ 742.67	£ 966.42
3	2D Game - Pilot Challenge	£ 4,358.53	£ 742.67	£ 5,101.20
4	3D Aircraft Models	£ 4,432.44	£ 742.67	£ 5,175.11
5	Aircraft Cutaways	£ 7,156.98	£ 557.00	£ 7,713.98
6	App Metrics	£ 428.00	£ -	£ 428.00
				£ -
				£ -
				£ -
7	Experience System	£ 656.63	£ -	£ 656.63
8	AiRplane - Augmented Reality Airplane	£ 1,839.28	£ -	£ 1,839.28
9	2D Game - Battle of Britain Day Revisited	£ 4,256.41	£ 928.33	£ 5,184.74
10	Airplane Customizable Showcase	£ 734.37	£ -	£ 734.37
		£ 37,819.53	£ 3,713.34	£ 41,532.87

Figure 9 The cost estimation of the Top Level Themes.

To calculate the cost estimation for this project, the estimated cost of all lower level tasks needed to accomplish each key and additional feature specified has been summed up, as well as the cost of managing, controlling and evaluating the project. The cost has been derived from the internal labour cost required to implement a key feature, as well as the cost of assigning freelance work.

2.3 PROJECT PLANNING CONSIDERATIONS

2.3.1 Task Duration and Resource Allocation

To estimate the time of each task, the beta distribution formula was used, shown below. This formula allows to base the estimated time more on the average time a task may require, giving a more accurate estimation of the time needed to finish a task.

$$Estimated\ time\ =\ (optimistic\ time\ +\ 4\ *\ average\ time +\ pessimistic\ time)\ /\ 6$$

To each task, internal staff members with related skills will be allocated to benefit from the close communication in the team, as well as the usage of the Scrum sprints. All of this reduces the chance of the task falling into overtime, as well as speeding up the possible completion time. In case of no fitting internal resources, associated freelance resources will be chosen, such as is the case with sound creation or video editing in the key features.

Furthermore, to also try to prevent a possibility of an overrun, which is a situation where one task depends on the completion of another but as the task takes longer than expected, the second one is forced to start, interdependent tasks, such as the creation of will have its completion time set as the pessimistic scenario.

2.3.2 Project Schedule

The project tasks will be scheduled in a hierarchy based system, with each task having a set level of priority. Scheduling tasks this way will allow for most of the tasks running in parallel – developers for example will be able to create the RAFBF information key feature, while the designers start creating the 2D models for the *Pilot Challenge* 2D game. Moreover, the lead developer will hold daily Scrum meetings. By doing so, no task evaluated at the current priority level will be left without any resources assigned, unless it is dependent on the finish of another.

To prevent any unfortunate results in the unlikely case of a task falling into overtime and failing to meet a set deadline, a contingency plan has been provided, meaning that each task will be covered in the budget by a ready to use extra amount of allocated time if needed.

2.3.3 Milestones

The milestones for this project have been set in a chronological order, with independent, parallelizable tasks being set at the start, and interdependent tasks being put off until after the release of the closed beta version. They have been set as the key and major points in the development of the product:

1. RAFBF Information, Unlockables & Experience System Implemented
2. Pilot Challenge Implemented
3. Battle of Britain Day Revisited Implemented
4. App Metrics
5. Closed Beta Released
6. 3D Aircraft Models Created
7. Aircraft Cutaways Created & Quiz Game Implemented
8. AiRplane – Augmented Reality Airplane Implemented
9. Airplane Customizable Showcase Implemented
10. Application Publicly Released

As it can be observed, the chosen layout of milestones will allow for the project to have most necessary features, such as the RAFBF videos and donation possibility implemented early into the early access version, allowing us to focus on the more demanding and project pausing, interdependent features such as the 3D models afterwards. As another advantage, this also allows for a long term collection of data from the feedback given by the players playing the early access version. These milestones also provide a suggested payment plan route, giving an indication where most of the objectives related to the project will be achieved.

3 FINANCIAL AND COMMERCIAL DATA

3.1 TOTAL COST PROPOSAL

3.1.1 Total cost

The total cost of the project has been shown below, with both the Value Added Tax included and excluded. Epitome Software would like to note for any possible future economical calculations that we are a VAT registered company.

			Amount	Tender Document Reference
1	Employed Staff Costs		£39,697.30	3.1.2
2	Freelance Contractor Costs		£3,713.34	3.1.2
3	Business Infrastructure Overhead Costs		£9,758.23	3.1.3
4	Business IT Overhead Costs		£3,137.13	3.1.3
5	Project Specific Direct Costs		£1,200.00	3.1.4
6	Travel, Accommodation and Subsistence Costs		£2,912.50	3.1.5
	Total Project Costs		£60,418.49	
	Contingency (insert %)	5%	£3,020.92	3.1.6
	Profit (insert %)	10%	£6,041.85	3.1.7
	Total Exc VAT		**£69,481.27**	
	VAT @ 20%		£13,896.25	
	TOTAL Project Cost inc VAT		**£83,377.52**	3.1.1

Figure 10 Total Cost breakdown.

3.1.2 Staffing Costs

When estimating the cost of the internal staff and freelance resources, a focus was set to use internal staff where possible. The costs for internal staff have been calculated using the following formulas

The costs have been estimated for each top level using the formulas below

(Yearly Salary + Employer's NI) / 46.4 / 5 = Daily staff cost

*Daily staff cost * Estimated time in days to finish task = Estimated cost of work of specified staff member in key feature*

While the use of freelance staff has been decided only in cases where it was unable to use internal. The formula for calculating their staffing cost has been shown below:

*Hourly rate * 8 = Daily freelance cost*

*Daily freelance cost * Estimated time in days to finish task = Estimated cost of work of specified freelance worker in key feature*

By the use of these formulas, it was possible to calculate to estimate the total cost of all staff associated with creation of each key feature.

3.1.3 Operational Overhead Costs

The business infrastructure overhead costs have been provided, including utilities, rent, services and staff nourishment. In cases were the cost was not constant every month, the annual and monthly costs have been based on an approximation of 12 months of payments.

Item	Cost Per Year	Cost Per Month	Notes/Assumptions
Premises Rent	£12,000.00	£1,000.00	
Business Rates	£2,400.00	£200.00	
Utilities - Gas	£1,000.00	£83.33	
Utilities - Electric	£1,850.00	£154.17	
Utilities - Water	£450.00	£37.50	
Premises Maintenance	£600.00	£50.00	
Premises Insurance	£750.00	£62.50	
Premises Cleaning	£1,000.00	£83.33	
Telecom - Landline	£800.00	£66.67	
Telecom - Mobile	£2,400.00	£200.00	
Internet and Broadband	£1,200.00	£100.00	
Data Cloud Storage	£600.00	£50.00	
Professional Services - Accountancy	£1,000.00	£83.33	
Professional Services - Legal	£500.00	£41.67	
Insurance - Employer/PL/Contents	£1,850.00	£154.17	
Marketing and Promotion	£2,500.00	£208.33	
Stationery and Consumables	£1,200.00	£100.00	
Catering and Refreshments	£600.00	£50.00	

TOTAL MONTHLY INFRASTRUCTURE OVERHEAD COS	**£2,725.00**

Figure 11 Business Infrastructure Overhead Costs.

	Annual	Cost per month
Annual IT Infrastructure Budget (eg server, backbone and network)	£1,500.00	£125.00

SPECIFIC COMPUTER SYSTEMS

System 1:	Project Management and Finance
Number of Systems in use for project:	**3**

Item	Purchase Cost	Lifespan (months)	Cost per month
PC - AMD Ryzen 5 3600, AMD RX 580, 1 TB HDD + 240 GB SSD	£564.75	36	£15.69
1 x Samsung LC27JG50QQNZA 27.0" 144Hz	£278.44	36	£7.73
MS Windows 10 Pro OS	£183.33	36	£5.09
MS Project Professional 2019	£682.53	36	£18.96
MS Office 365 Business Standard	£99.40	12	£8.28
Total Monthly Cost per system			£55.76
Total Monthly Cost of all system units			**£167.27**

System 2:	Design and Modelling
Number of Systems in use for project:	**2**

Item	Purchase Cost	Lifespan (months)	Cost per month
PC - AMD Ryzen 9 3900X, NVIDIA GeForce RTX 2080 SUPER, 2TB SSD	£1,824.11	36	£50.67
2 x 23.6" MSI Optix MAG241C 144Hz	£501.22	36	£13.92
MS Windows 10 Pro OS	£183.33	36	£5.09
Adobe Creative Cloud Photography Plan	£99.80	12	£8.32
MS Office 365 Business Standard	£99.40	12	£8.28
Total Monthly Cost per system			£86.29
Total Monthly Cost of all system units			**£172.57**

System 3:	Programming and Development
Number of Systems in use for project:	3

Item	Purchase Cost	Lifespan (months)	Cost per month
PC - AMD Ryzen 9 3900X, NVIDIA GeForce RTX 2080 SUPER, 2TB SSD	£1,824.11	36	£50.67
2 x 23.6" MSI Optix MAG241C 144Hz	£501.22	36	£13.92
MS Windows 10 Pro OS	£183.33	36	£5.09
MS Visual Studio 2019 Professional	£529.53	12	£44.13
Apple Developer Program	£65.62	12	£5.47
MS Office 365 Business Standard	£99.40	12	£8.28
Total Monthly Cost per system			£127.56
Total Monthly Cost of all system units			**£382.69**

System 3:	Audio
Number of Systems in use for project:	1

Item	Purchase Cost	Lifespan (months)	Cost per month
PC - AMD Ryzen 5 3600, AMD RX 580, 1 TB HDD + 240 GB SSD	£564.75	36	£15.69
1 x Samsung LC27JG50QQNZA 27.0" 144Hz	£278.44	36	£7.73
MS Windows 10 Pro OS	£183.33	36	£5.09
Total Monthly Cost per system			£28.51
Total Monthly Cost of all system units			**£28.51**

TOTAL MONTHLY IT OVERHEAD COST	£876.05

Figure 12 Business IT Overhead Cost.

The IT overhead cost in our company has been based on the computer setup in our office. The PC systems have been built and set up in reference to expected usage needed by our internal staff, therefore limiting the amount of unused computing power and program licenses, lowering the overall cost. An annual IT infrastructure budget is also set for our secure internal server, storing version control repositories in our company and source code for projects.

Budget for Project:	Jan		Feb		Mar		Apr		May		Jun	
	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost
Take Off!	50%	£1,800.52	50%	£1,800.52	0%	£0.00	0%	£0.00	33%	£1,199.15	33%	£1,199.15
Other Projects:												
Wiltshire Walking	0%	£0.00	0%	£0.00	0%	£0.00	0%	£0.00	33%	£1,199.15	33%	£1,199.15
No more plastic!	0%	£0.00	0%	£0.00	0%	£0.00	0%	£0.00	33%	£1,199.15	33%	£1,199.15
Conservation UK	50%	£1,800.52	50%	£1,800.52	0%	£0.00	0%	£0.00	0%	£0.00	0%	£0.00
Castle Edinburgh	0%	£0.00	0%	£0.00	0%	£0.00	0%	£0.00	0%	£0.00	0%	£0.00
	100%	*£3,601.05*	*100%*	*£3,601.05*	*0%*	*£0.00*	*0%*	*£0.00*	*100%*	*£3,597.45*	*100%*	*£3,597.45*

Budget for Project:	Jul		Aug		Sep		Oct		Nov		Dec		TOTAL COST Per PROJECT	Inf Cost	IT Cost	Total Check
	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost	% Load	Inf and IT OH Cost				
Take Off!	33%	£1,199.15	33%	£1,199.15	25%	£900.26	33%	£1,199.15	33%	£1,199.15	33%	£1,199.15	**£12,895.35**	£9,758.23	£3,137.13	£12,895.35
Other Projects:																
Wiltshire Walking	33%	£1,199.15	0%	£0.00	0%	£0.00	0%	£0.00	0%	£0.00	0%	£0.00	**£3,597.45**	£2,722.28	£875.17	£3,597.45
No more plastic!	33%	£1,199.15	33%	£1,199.15	25%	£900.26	0%	£0.00	0%	£0.00	0%	£0.00	**£5,696.86**	£4,310.95	£1,385.91	£5,696.86
Conservation UK	0%	£0.00	33%	£1,199.15	25%	£900.26	33%	£1,199.15	33%	£1,199.15	33%	£1,199.15	**£9,297.91**	£7,035.95	£2,261.96	£9,297.91
Castle Edinburgh	0%	£0.00	0%	£0.00	25%	£900.26	33%	£1,199.15	33%	£1,199.15	33%	£1,199.15	**£4,497.71**	£3,403.53	£1,094.18	£4,497.71
	100%	*£3,597.45*	*100%*	*£3,597.45*	*100%*	*£3,601.05*	*100%*	*£3,597.45*	*100%*	*£3,597.45*	*100%*	*£3,597.45*	**£35,985.27**			

Figure 13 Project Overhead Loading.

3.1.4 Specific Resources and Equipment for this project

As the project requires a secure location to store the game metrics, a server will be rented to allow for many multiple connections by users. The server will be available to be rented further after the initial 12 months by RAFBF.

ITEM	NOTES	UNIT OF SUPPLY	UNIT COST	QTY	TOTAL COST
Server rental	Metrics collection storage	Per year	£1,200.00	1	£1,200.00
		TOTAL PROJECT SPECIFIC COSTS			**£1,200.00**

Figure 14 Project Specific Costs.

3.1.5 Project Management Costs – travel, accommodation, meetings

As monthly meetings will be held, alternating the location between London and Lincoln, the travel costs have been calculated, using trains as the preferred route of transport. Accommodation of two days has been counted for to allow our managing director to come a day before the meeting to a pre-defined location.

ITEM	NOTES	QTY	UNIT COST	TOTAL COST
Return train to Lincoln	Monthly Trip to Lincoln - 5 meetings	5.00	£128.40	£642.00
Return train to London	Monthly Trip to London - 5 meetings	5.00	£64.10	£320.50
Hotel Accommodation in Lincoln - 2 nights per visit	Monthly Trip to Lincoln - 5 meetings	5.00	£100.00	£500.00
Hotel Accommodation in London - 2 nights per visit	Monthly Trip to London - 5 meetings	5.00	£220.00	£1,100.00
Daily subsistence allowance	Monthly Trip to Lincoln & London - 10 meetings	10.00	£35.00	£350.00
TOTAL TRAVEL, ACCOMMODATION and SUBSISTENCE COSTS				**£2,912.50**

Figure 15 Project Management Costs.

3.1.6 Contingency Costs

To cover for contingency planning, a 5% sum of the total budget cost is proposed. Although in case of a severe breakdown this will allow for each task to have only 5% of additional production time (e.g. 0.2 days of work in case of a 4 days task), in a heavily less pessimistic scenario the sum of £3,020.92 will allow to, for example, transfer a work week of a task from an internal staff member in case of a heavy injury to a freelance worker.

3.1.7 Profit Margin

A 10% profit margin has been set from the project cost. This has been set as a standard rate of software development in accordance with other projects developed in the past by our company.

3.2 Payment plan linked to milestones within the Product Development Plan

A proposed payment plan has been made, shown as a the table below. Epitome Software holds the belief that the release of a working closed beta should be set at the half of the overall payment amount of the project, as each of the key tasks leading to that release is independent, allowing for quick progression. The early release of the closed beta version will also allow more people to get interested with the game and RAFBF information, possibly bringing in more donators.

Milestone	Percentage of contract value	Estimated date of payment
Contract Signed	15%	04/05/2020
RAFBF Information, Unlockables & Experience System Implemented	5%	18/05/2020
Pilot Challenge Implemented	10%	15/06/2020
Battle of Britain Day Revisited Implemented	10%	06/07/2020
App Metrics	5%	13/07/2020
Closed Beta Released	10%	20/07/2020
3D Aircraft Models Created	7.5%	31/08/2020
Aircraft Cutaways Created & Quiz Game Implemented	7.5%	28/09/2020
AiRplane – Augmented Reality Airplane Implemented	5%	19/10/2020
Airplane Customizable Showcase Implemented	5%	03/11/2020
Application Publicly Released	20%	01/04/2021

3.3 Copyright and Intellectual Property Rights

Epitome Software will agree a Non-Disclosure Agreement with the RAFBF before commencing work, for all internal staff members involved with the project to agree to. Upon releasing the closed beta version, reaching the milestone, the RAFBF will receive the economic rights from Epitome Software to *Take Off!*.

In case of assigning freelance resources, as a contract requirement all freelancer workers will be required to agree in a written form that their work will be the property of Epitome Software before commencing their work, as well as agreeing to a Non-Disclosure Agreement.

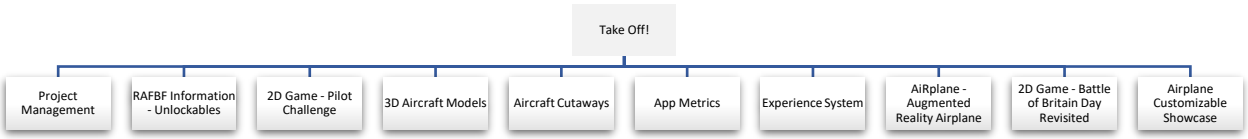
3.4 Post-development application support

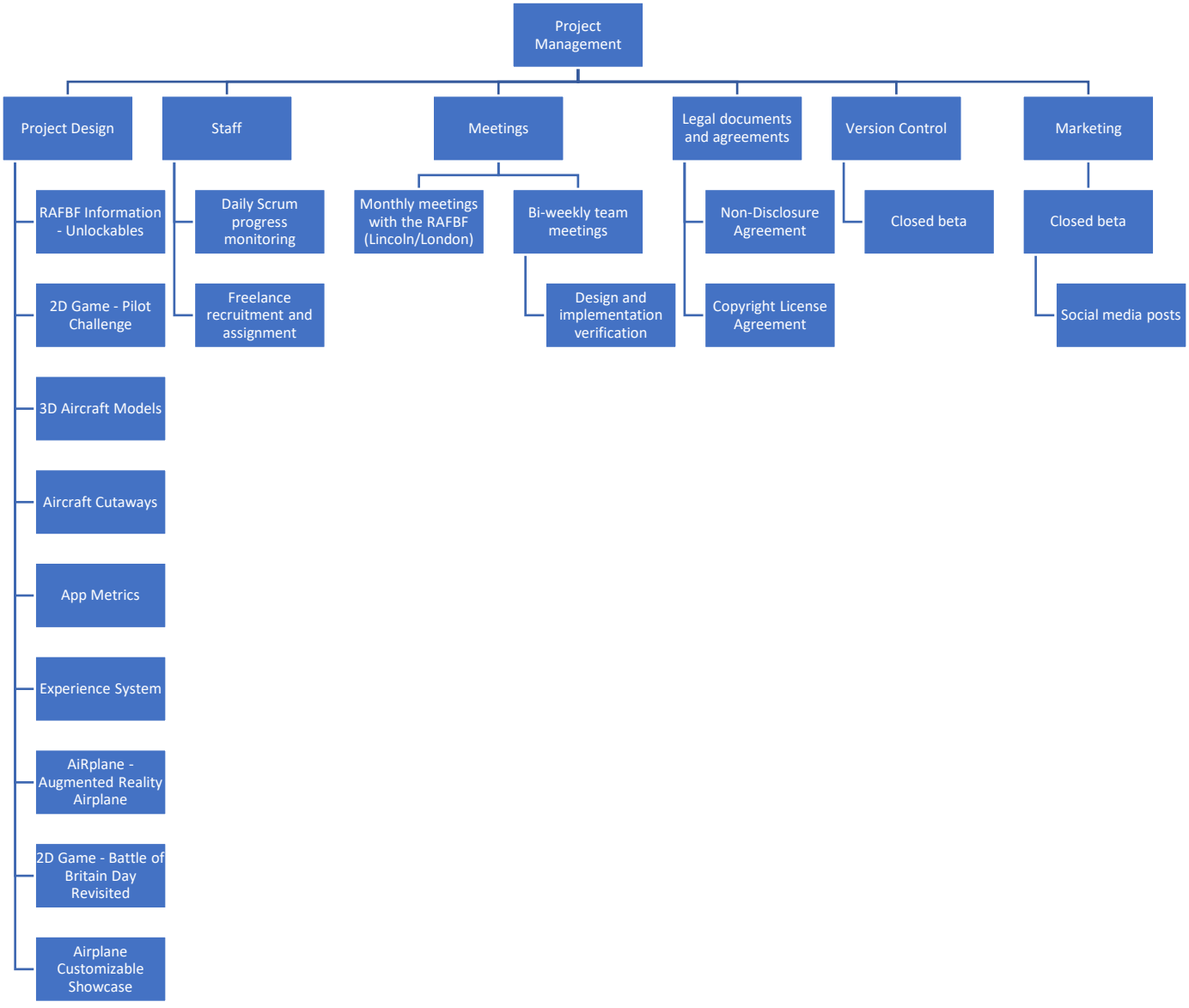
Epitome Software will provide 12 months of critical bug fixing (e.g. game crashing at start) and customer support, as well as 6 months of minor bug fixing (e.g. aerodynamic physics mechanics breaking) at no cost after the release of *Take Off!*.

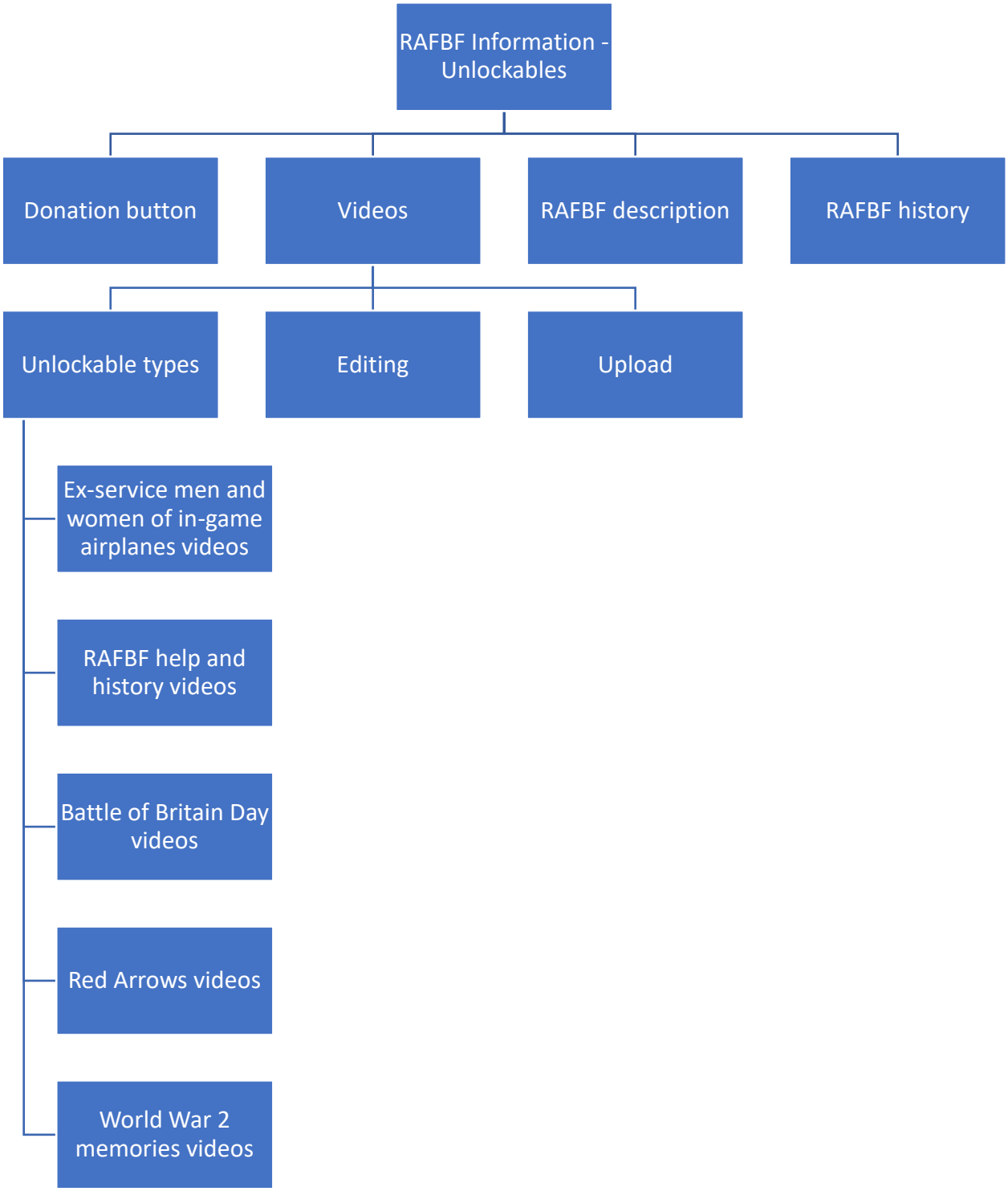
Around 3 months after release, Epitome Software will provide a free update to the game, allowing the players to fly 3 new RAF airplanes, chosen by a player vote. This will allow to boost the player base after the drop of the initial release date player base.

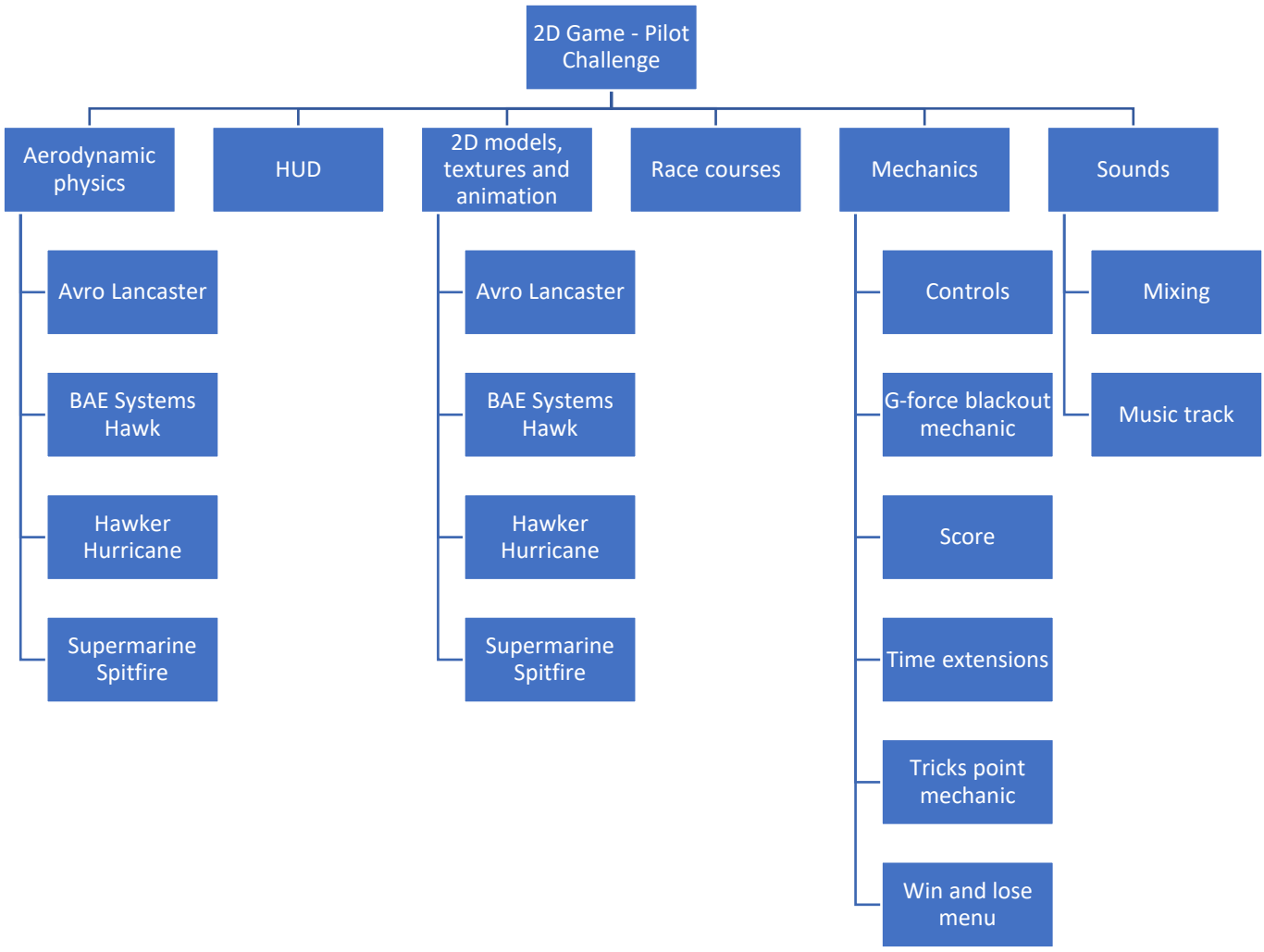
APPENDIX

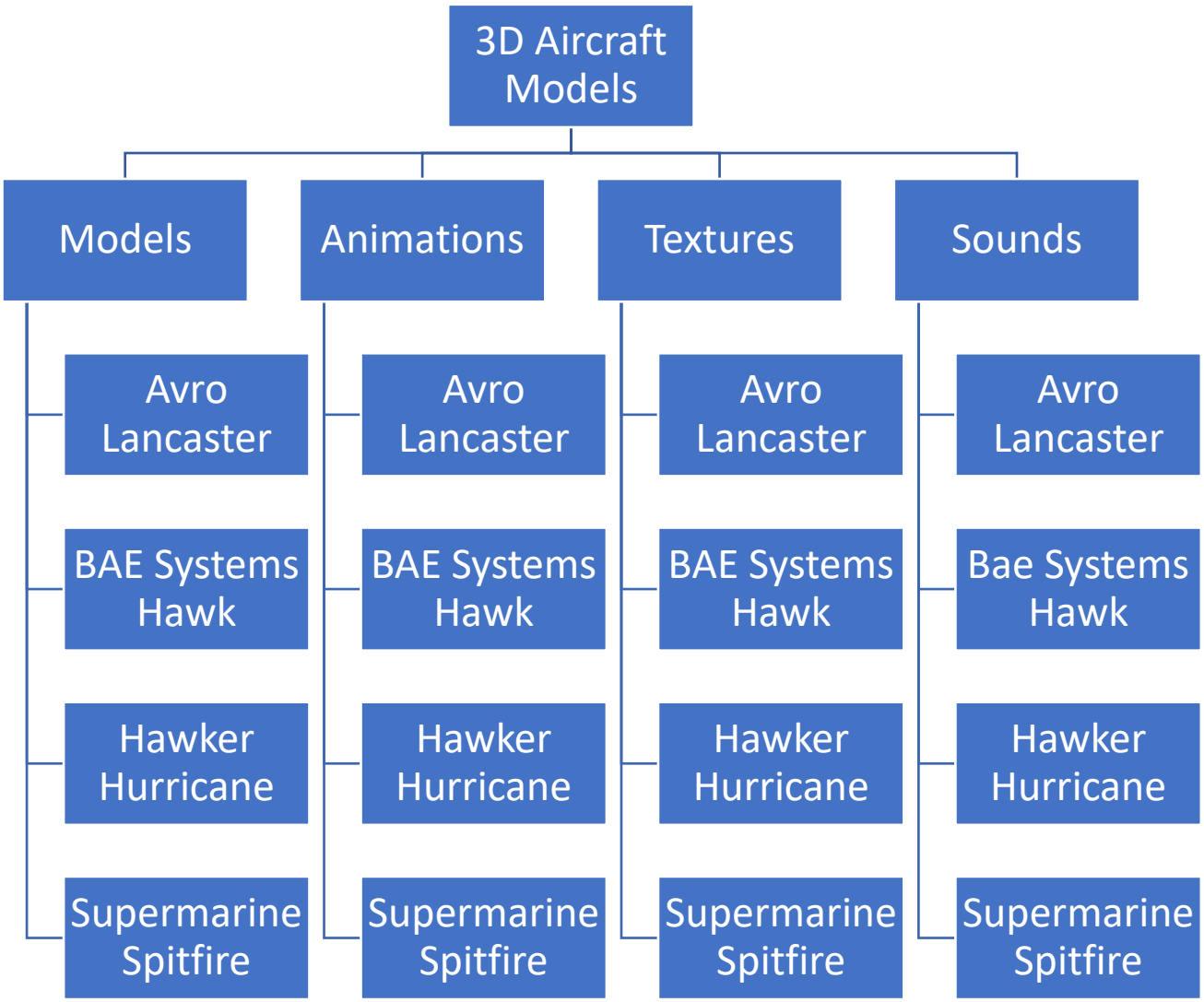
WORK BREAKDOWN STRUCTURE

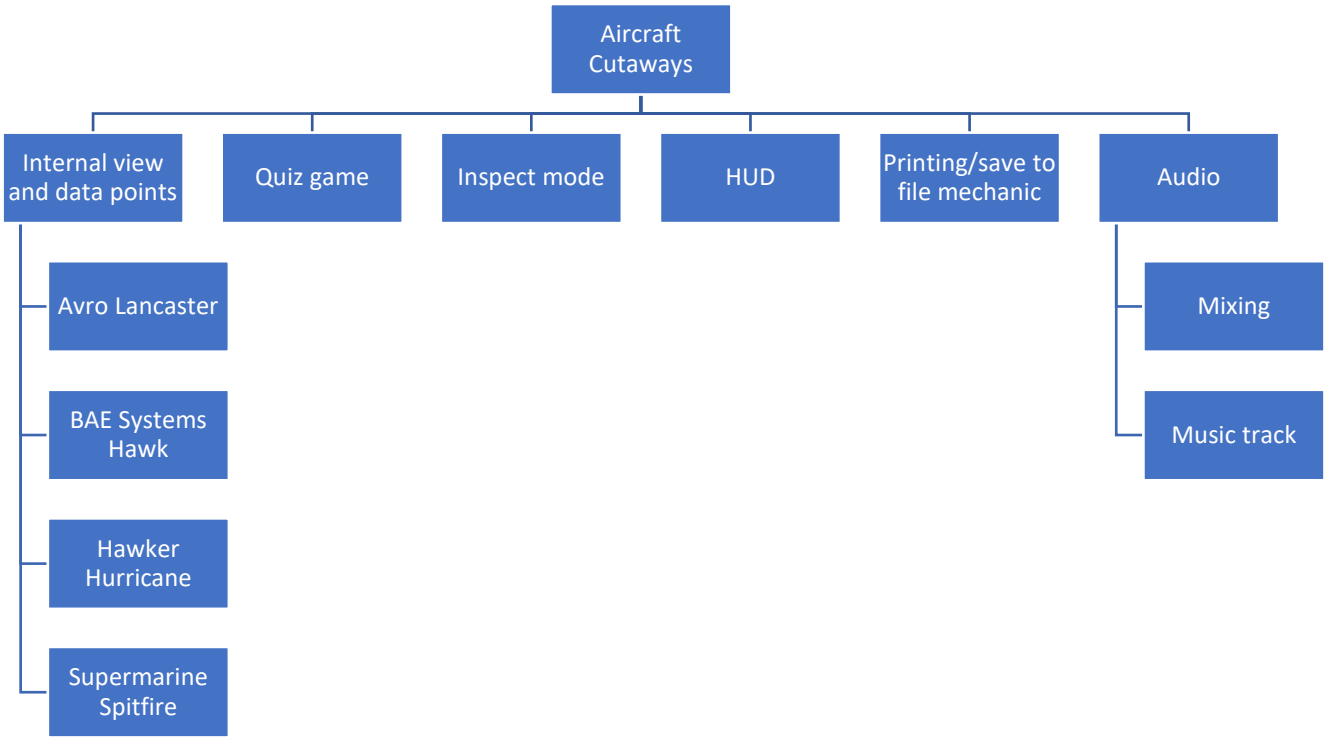


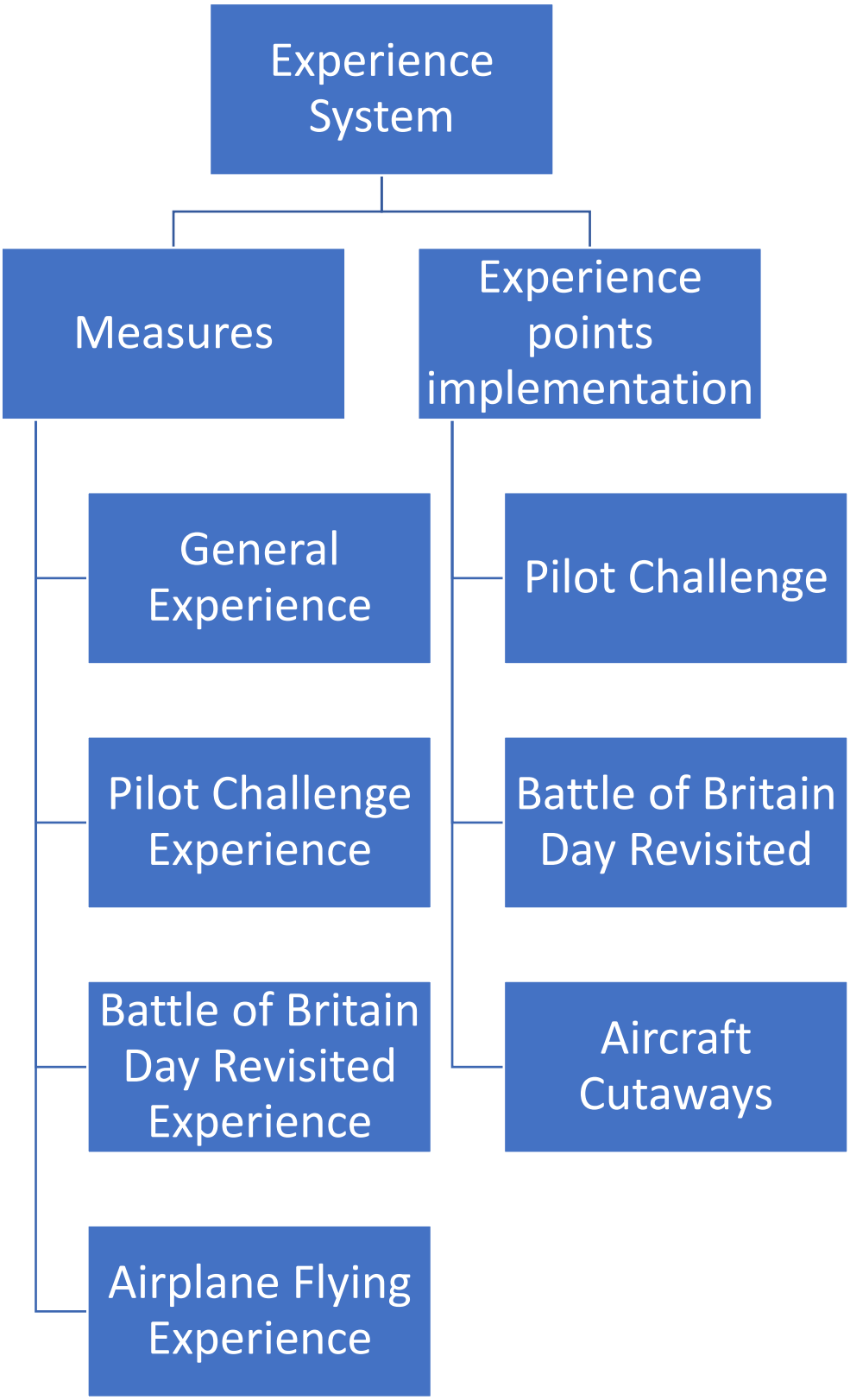


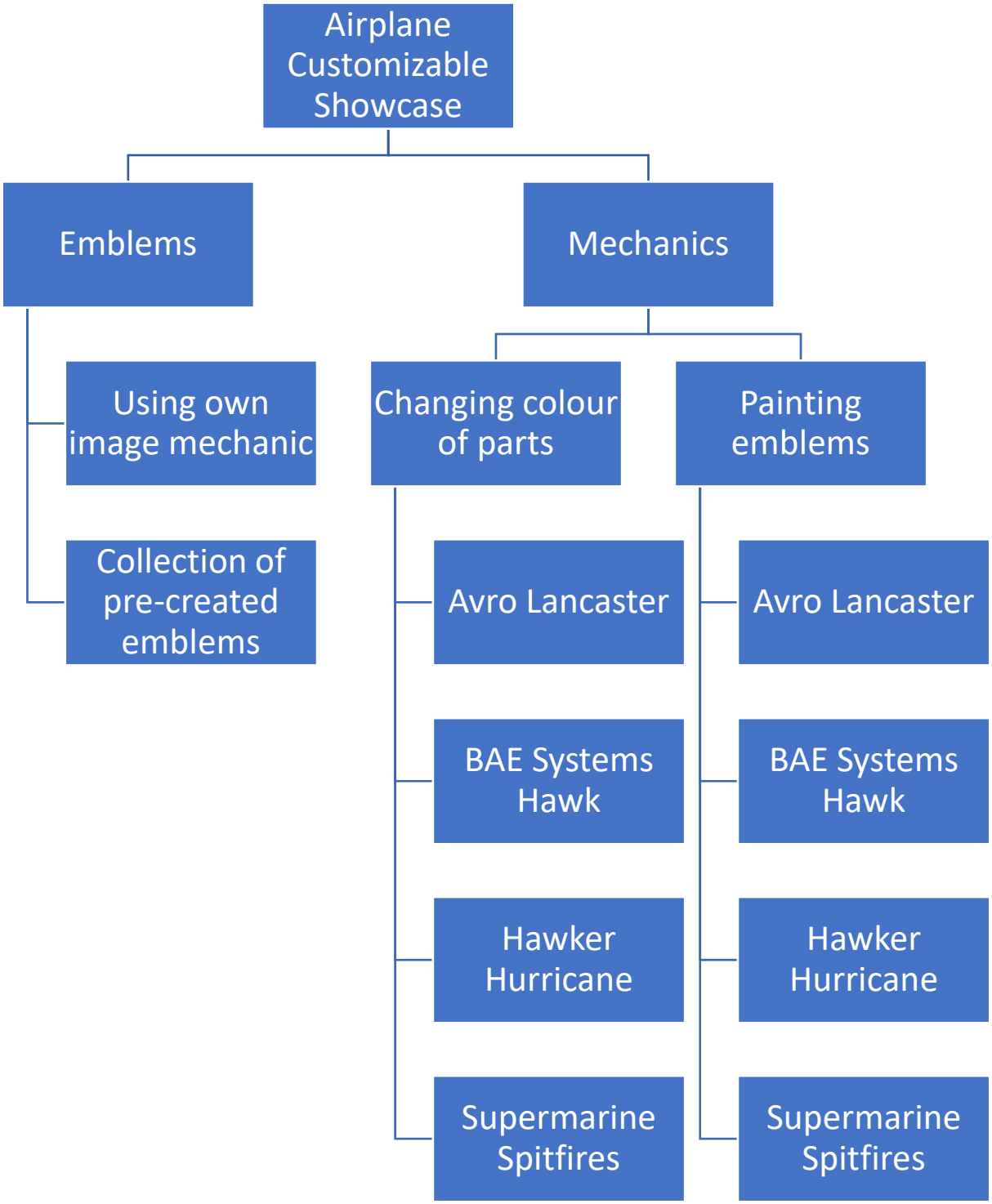

RAFBF Information - Unlockables
Donation button
Videos
RAFBF description
RAFBF history
Unlockable types
Editing
Upload
Ex-service men and women of in-game airplanes videos
RAFBF help and history videos
Battle of Britain Day videos
Red Arrows videos
World War 2 memories videos

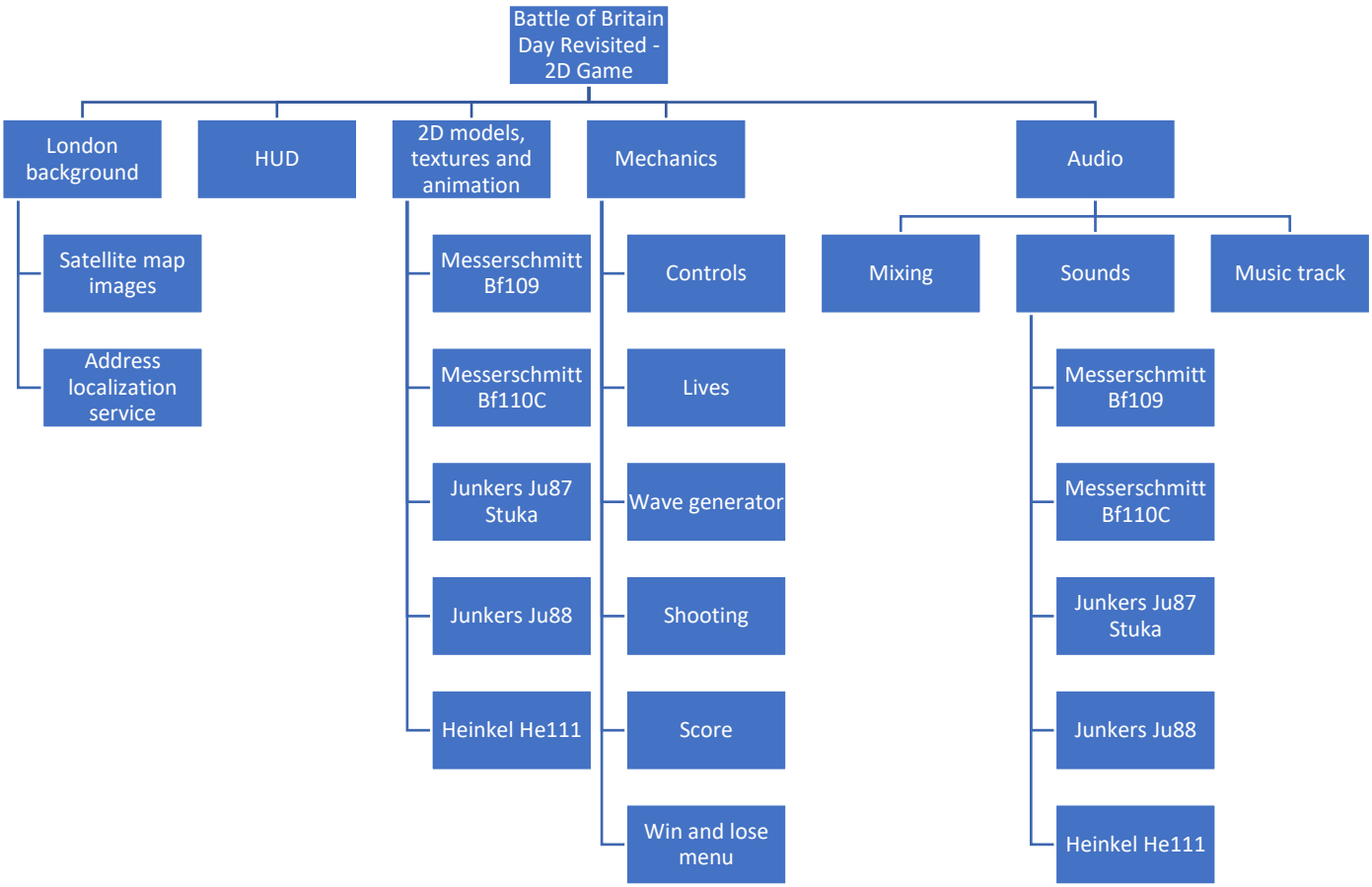

2D Game - Pilot Challenge
Aerodynamic physics
HUD
2D models, textures and animation
Race courses
Mechanics
Sounds
Avro Lancaster
BAE Systems Hawk
Hawker Hurricane
Supermarine Spitfire
Avro Lancaster
BAE Systems Hawk
Hawker Hurricane
Supermarine Spitfire
Controls
G-force blackout mechanic
Score
Time extensions
Tricks point mechanic
Win and lose menu
Mixing
Music track

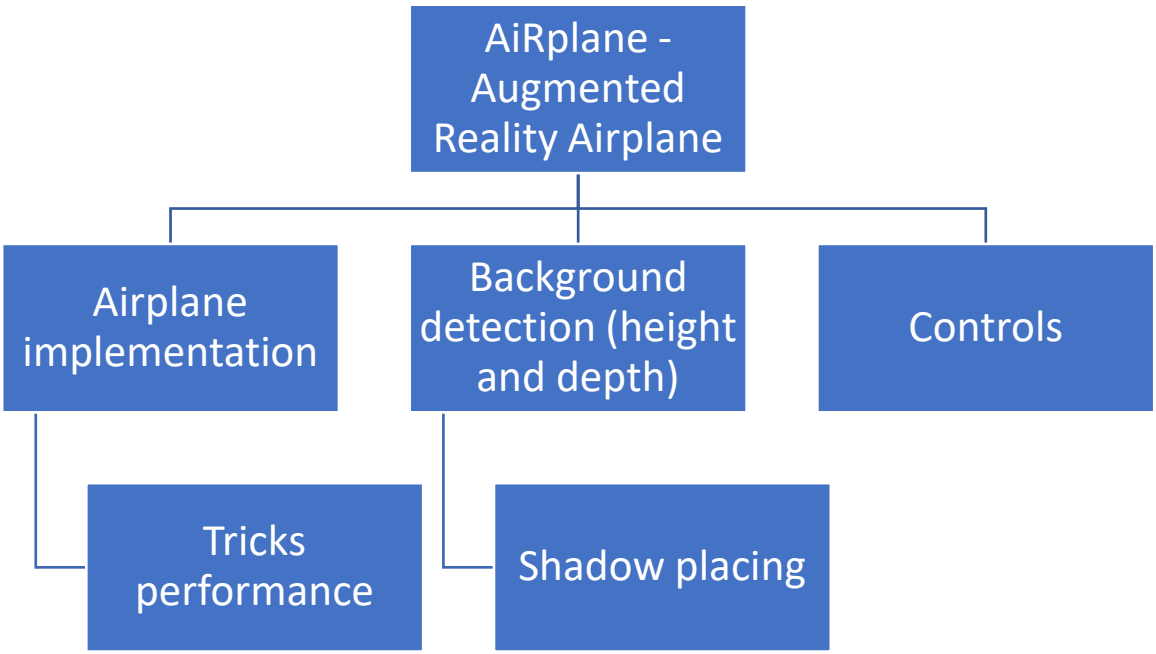

3D Aircraft Models
Models
Animations
Textures
Sounds
Avro Lancaster
BAE Systems Hawk
Hawker Hurricane
Supermarine Spitfire
Avro Lancaster
BAE Systems Hawk
Hawker Hurricane
Supermarine Spitfire
Avro Lancaster
BAE Systems Hawk
Hawker Hurricane
Supermarine Spitfire
Avro Lancaster
Bae Systems Hawk
Hawker Hurricane
Supermarine Spitfire


Aircraft Cutaways
Internal view and data points
Quiz game
Inspect mode
HUD
Printing/save to file mechanic
Audio
Avro Lancaster
BAE Systems Hawk
Hawker Hurricane
Supermarine Spitfire
Mixing
Music track


Experience System
Measures
Experience points implementation
General Experience
Pilot Challenge Experience
Battle of Britain Day Revisited Experience
Airplane Flying Experience
Pilot Challenge
Battle of Britain Day Revisited
Aircraft Cutaways


Airplane Customizable Showcase
Emblems
Mechanics
Using own image mechanic
Collection of pre-created emblems
Changing colour of parts
Painting emblems
Avro Lancaster
BAE Systems Hawk
Hawker Hurricane
Supermarine Spitfires
Avro Lancaster
BAE Systems Hawk
Hawker Hurricane
Supermarine Spitfires


Battle of Britain Day Revisited - 2D Game
London background
HUD
2D models, textures and animation
Mechanics
Audio
Satellite map images
Address localization service
Messerschmitt Bf109
Messerschmitt Bf110C
Junkers Ju87 Stuka
Junkers Ju88
Heinkel He111
Controls
Lives
Wave generator
Shooting
Score
Win and lose menu
Mixing
Sounds
Music track
Messerschmitt Bf109
Messerschmitt Bf110C
Junkers Ju87 Stuka
Junkers Ju88
Heinkel He111


AiRplane - Augmented Reality Airplane
Airplane implementation
Background detection (height and depth)
Controls
Tricks performance
Shadow placing

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