margin of error

Business Plan, 2016 – 2019

Prepared by Ronan Murphy, Shane Gavin, Kevin Duffy, Michael Campbell, Brian Smullen, and Mark Barry, April 2016.

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Appendixes

1.0 Executive Summary

Company and Product

Margin of Error Ltd is an Irish game development studio. The company is currently developing its first flagship title, *All the Way Down*--a fast-paced downhill mountain biking game which combines highly realistic locations and mechanics with dream tracks to create a unique gaming experience. An early demo level from the game has already been produced and is in the process of being user-tested.

Margin of Error is a joint venture between Ronan Murphy, Shane Gavin, Kevin Duffy, Michael Campbell, Brian Smullen, and Mark Barry. Two of the promoters have previous experience working on commercial software products, one has previously acted as a sole trader in a related industry, and all promoters are recent graduates of Dundalk Institute of Technology's B.Sc. (Hons) in Game Development course. Promoter profiles can be found in section 2.1 (Promoters). Ownership and management details can be found in section 6 (Staffing and Operations).

The Market

The gaming industry is set to exceed a net worth of 100 billion dollars worldwide by 2017. Mountain biking is an often underrated sport with more than 40 million participating in the activity annually in the US alone. Margin of Error's initial product offering, *All the Way Down*, is perfectly poised to appeal to enthusiasts in both of these areas, as well as their intersection. Games targeted at sporting activities perceived to be niche are generally avoided by large AAA studios, but have still, historically, generated sales in excess 250,000 units, many well in excess of that figure. Recent advancements in development technologies and distribution channels open these markets up to smaller development studios. It is within this space that *Margin of Error* hopes to build a brand known for high-quality, engaging gaming experiences.

Overview of Financial Projections

The company is currently seeking funding of €190,000 to fund development of its flagship title, *All the Way Down*. The following is a summary of the company's financial projections for the first 3 years:

	Year 1	Year 2	Year 3
Sales	€ 0	€722500	€288750
Expenses	€ 126650	€271723	€191331
Net Profit before Tax	€-126650	€450777	€ 97429
Investment	€ 18000	€ 0	€ 0
Employment	€ 120000	€120000	€120000

2.0 Company Overview

2.1 Promotors

2.1.1 Ronan Murphy

Ronan's specialization is programming. For All the Way Down, Ronan has worked on Development of bike mechanics, bike customization options, bio-metrics monitoring, and leader board integration. For his 3rd year project Ronan served as a programmer for Team BRAG's Perspective. Ronan has previously worked as a Software Engineer Intern for Citrix.

2.1.2 Shane Gavin

Shane's specializations are programming and graphic design. For All the Way Down, Shane has worked on menu design and implementation, and on development of the game spectators--inclusive of mechanics and model development. For his 3rd year project Shane served as the lead programmer for Bushwhack's *Twisted*. Shane has almost a decade's worth of experience in working on commercial software projects, and has acted as a sole trader in the area web development and graphic design.

2.1.3 Kevin Duffy

Kevin's specialization is sound design and implementation. For All the Way Down, Kevin has primary responsibility for all aspects of sound design and implementation in the game, both in-game sounds and menus / UI sounds. Kevin is also responsible for sourcing, and obtaining rights for, 3rd party music tracks. For his 3rd year project Kevin developed the game *BeepBox*.

2.1.4 Michael Campbell

Michael's specializations are process management and physics. For All the Way Down, Michael has worked on development of bike mechanics, split time mechanics, bike customization options, camera mechanics, and more. Michael also serves as Margin of Error's Scrum Master. For his 3rd year project Michael served as Scrum Master and Sound Designer for Bushwhack's *Twisted*.

2.1.5 Brian Smullen

Brian's specialization is level design. For All the Way Down, Brian has primary responsibility for all aspects of environment design including track development, environment dressing, 3D asset integration, and lighting design. For his 3rd year project Brian served as a programmer for Bushwhack's *Twisted*.

2.1.6 Mark Barry

Mark's specialization is 3D modelling and related disciplines. For All the Way Down, Mark has worked on development and texturing of environment models (rocks, trees), artificial structures (starting gates, tents, etc.) and the bike and character models. For his 3rd year project Mark served as the lead modeller for Bushwhack's *Twisted*.

2.2 Advisors

2.2.1 Accountant

Emma Cadden, KSI Faulkner Orr, Gateway House, 133 Capel Street, Dublin 1. 018044750

2.2.2 Start-up Advisor

David Connolly, LEO Enterprise Executive, Enterprise Ireland, Local Enterprise Office, Block 4, Floor 1, Wood Quay, Dublin 8.

2.2.3 Localization Expert

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2.3 Business and Product Summary

Margin of Error Ltd is a game development studio start-up. The company specialises in the development of highly-realistic extreme sporting titles for "next generation" consoles and PC. Margin of Error Ltd is an Irish company.

Recent advancements in development technologies and their licencing, combined with easily-accessible distribution channels (digital distribution), will allow the company to produce games with the quality, scope, and potential reach of AAA titles, all while keeping costs and staffing to a minimum.

For more information on the company structure, see the *Operations* section.

The company's first proposed product is *All the Way Down*, a fast-paced downhill mountain-biking experience on a world stage. With unique and challenging tracks to experience in over 20 countries across Europe, Africa, the Middle East, and Asia, players will embark on a competitive world tour from the forests of Ireland to the Australian outback, all the way down. A demo level for *All the Way Down* has already been developed, and is currently in the process of being user-tested.

The game is differentiated from competing products in its world-wide scope and realistic depictions of landscapes and mechanics. *All the Way Down* is more than a game, it's a simulation which can be enjoyed by anyone, anywhere, all year round, irrespective of weather restrictions, mobility issues, or financial constraints which prevent travel.

All the Way Down will be released to market in late 2017. The initial release will be expanded with additional downloadable content (DLC) throughout 2018 to extend revenue streams.

Success for *All the Way Down* will be measured by sales in excess of €1,000,000 by the end of year 3. In an industry with an estimated net worth of 91.5 billion US dollars (2015) the company is predicting a very conservative yearly market share.

2.4 Long-term Aim of the Business

The primary long-term aim for Margin of Error is to build brand-recognition as a studio that produces high-quality, engaging games. The company will use its flagship title, *All the Way Down*, to showcase its abilities, its attention to detail, and to generate initial revenue streams.

Beyond this initial offering, the company will focus on steady expansion to extend their catalogue and to bring their titles to additional platforms (inclusive of mobile devices).

It is the company's intent to begin work on a second title as early as 2018, splitting the initial team into *Maintenance* (DLC) and *New Product Development* groups. Once this second title has been released to market, new team members will be brought on board to allow for simultaneous development of new products and DLC for existing titles.

It is the company's aim to release a minimum of 1 new title every 18 to 24 months from late 2019 onward. The company will be structured into small, agile development teams capable of meeting this release schedule.

2.5 S.W.O.T. Analysis

Strengths	Weaknesses
• Young, energetic and enthusiastic team • World tour events concept in the game is unique • Game concept is proven • Can work cheaply up until product delivery • VR Implementation • Qualified game developers • Experienced in agile development	• Untested concept; no real way of knowing if it will sell • New business so no reputation • Weaknesses in terms of self-produced 3D model and animation development • Not much start up cash
Opportunities	**Threats**
• Idea has tourism potential • Relatively untapped niche market • Strong interest from target market before development began • VR is a growth market • Only one direct competitor and they still haven't officially released • Financial opportunities for funding in Ireland • Potential to be bought out by a larger corporation	• MTB Freeride 2 could release before us and eat into our market • Indie games are a saturated market and the game might fail out of the gate • Larger companies could use the idea and make a more successful product

3.0 Market Analysis

3.1 Target Market

An industry study conducted by Newzoo and GlobalCollect estimates that there are 1.78 billion gamers internationally, and mountain biking is a very popular activity worldwide, with over 40 million people participating in America annually. Each of these sectors encompass a vast number of potential customers, and the market that the team is targeting is where these two sectors overlap.

The team at Margin Of Error intends to focus on this target market, but All the Way Down will appeal to those who are solely interested in mountain biking, and those interested in video games.

The videogames industry had an estimated net worth of 91.5 billion USD in 2015 and is expected to reach 107 billion USD by 2017 according to Newzoo's Global Games Market Report.

According to the Paris, France NPD Group, the global cycling industry is estimated to be worth 38.5 billion USD.

The Gluskin Townley Group give figures on the American cycling industry. 86% of mountain bikers ride either occasionally or infrequently. This would be the ideal target customer, since they are more likely to have other interests such as gaming. So who is this mountain biker? 49% of mountain bikers are female, so the game will be gender neutral so as to not alienate anyone. The average age of the mountain biker is 35 years old. According to the 2012 US Bike Census, there are 40 million cyclists in America, 24.4% are mountain bikers. This means that there are 9,760,000 potential customers in the US alone. So this means that ideally 8,393,600 of these would be likely to be interested in the game. The team at Margin of Error conducted a survey on mountain bikers. 96% of the people surveyed said they were interested in the game. This shows a strong interest from this demographic.

According to a study commissioned by Pixwoo in 2013, along with the Essential Software Association, the average gamer is 35 years old also. 44% of these are female, meaning there is still a need for gender neutrality. Gamers and mountain bikers display many similar characteristics, and so have potential for a lot of overlap. So in conclusion, the target customer is a 35 year old person with an interest in either mountain biking, gaming, or ideally both.

3.2 Total Market Valuation

All the Way Down is a niche sports game. The following table shows research found on vgchartz.com into similar niche sports games, along with the year of release, and sales figures.

Title	Year	Sales	Other info
Downhill domination	2003	0.47m	
FlatOut: Ultimate Carnage	2007	0.12m	
MLB 16: The Show	2016	0.28m	
MotoGp 15 2015,	2015	0.24m	
mx vs atv supercross	2014	0.1m	
mx vs atv supercross encore	2015	0.5m	
ride	2016	0.38m	
Sébastien Loeb Rally Evo	2016	0.06m	
Shaun white skateboarding	2010	0.37m	(pc, ps3, xbox360 only)
Shaun white snowboarding	2008	1.47m	(ps3, xbox360 only)
Ski-Doo snowmobile challange	2008	0.23m	
Stoked	2009	0.21m	
Superstars V8 Next Challenge	2010	0.02m	
Tour De France 2014	2014	0.06m	
WRC 2: FIA World Rally Championship	2011	0.25m	

The average sales for this list is 0.314 million sales. This shows that there is potential for relatively large amounts of sales for a niche sports game such as this.

3.3 Target Company Revenue

The release plan for the game is to avoid competing with large industry release periods, as these big budget games would eat into the sales of any other games being sold at that period. Christmas and Steam sales will also help resurge the sales of the game after the initial release, and so will the strategically placed DLC releases to capture the holiday gamers.

The ESA Essential Facts on the computer and video games industry show that the most frequently used hardware for playing games is PC (64%) and dedicated games console (56%). As such, the development team is targeting Steam and the leading console platforms (PS4, Xbox One) for distribution. According to Steam Spy's Sergey Galyonkin, the average Steam game sells 32,000 copies. The sales target for this game is 28,500 copies at €30, which is including sales on consoles. This price point was decided based on the target customer survey conducted by the team. Over 56% of those surveyed were willing to pay €35 or more, while 36% requested less than this. The €30 price was decided upon to be most suitable as a result of these figures. If the target is reached, this would generate €855,000 in revenue.

3.4 Market Trends

Virtual Reality is a new technology emerging on the game development market very soon. The HTC Vive, PSVR, and Oculus Rift are just some examples of the new VR platforms appearing on the video game scene, and these will make a big splash in 2016. Developers have been working with the technology for several years now, ironing out many issues with the technology, with big publishers like Ubisoft putting a lot of time, money and research into ensuring the technology is safe and fun for users. As Ian Baverstock put it at Develop: "From an investment point of view, oh my God, virtual reality is the place you want to be."

Episodic, free to play, and other release models have become more viable and commonplace in the industry. Transparent game design is becoming more popular with developers, allowing them to develop their game alongside the community to make the game they want. Kickstarter allows developers to get project finance and community assurance before fully dedicating to developing a major project.

Indie developers have had a resurgence in recent years. Developer markets have become more open, with Steam, the PlayStation Store and Xbox Marketplace allowing for independent developers to distribute their content quickly, easily and most importantly cheaply. Game engines like Unreal and Unity have made it even cheaper and easier for smaller studios to make successful games, improving quality and development time.

Mobile gaming has grown the industry immensely. It's becoming very common for larger games to have support apps available on mobile devices to create a kind of eco-system around your game. According to BigFishGames' Global Games Stats, It's estimated that the mobile gaming industry reached $25 billion in sales in 2014. That's almost double (42%) over 2013.

Real world interactive toy-based games, such as Skylanders or Disney's Infinity, have grown in popularity in recent years, proving to be a very profitable design model for a game. It's especially popular with children because of the real world interaction going into the game. With the growing viability of 3D printing, this kind of game is no longer the domain of only the big developers. Hi-Rez studios, creators of "Smite" allow their players to purchase 3D printed figures based on the game. They have bigger plans too, as Harris explains "We want players to be able to go to Amazon, buy the game, see a 3D print, buy that too, and then have that open up a cool item in the game."

Gaming is no longer just about playing the games. Twitch and YouTube have become massive platforms for players to show off their skills and create their own content by playing games, attracting viewers and amassing fanbases of their own. Some of the largest gaming personalities on these sites have potential to provide a game massive advertising, putting it in the spotlight as a result. According to BigFishGames' Global Games Stats, YouTube gaming channels bring in more than 3.5 billion views each month.

E-Sports is a growing industry in itself built on top of the gaming industry. As time goes on, it will become more and more popular, exposing games to viewers and an audience that may not have been interested in a game before. According to BigFishGames' Global Games Stats, 71 million people watch competitive gaming worldwide.

Parents are becoming advocates for gaming. The Guardian reports that as the first generation of parents who grew up as gamers are having children, they pass on the knowledge and enthusiasm to their children. Families are spending more time playing games together, which may have a positive effect on how people view video games and the industry. This could all lead to a steep rise in titles that seek to challenge and entertain both parents and children together – a sort of Pixar effect.

3.5 Demographic Changes

The gamer demographic is firstly very difficult to summarise as one group. With an estimated 1.78 billion gamers worldwide (according Newzoo & GlobalCollect), it can't be expected for them to fall under an easily identifiable group. Statistics on exactly who is playing games have only gotten more accurate in recent years. The ESA Essential Facts provide many statistics on gamer demographics, but the two key stats are that the average gamer is 35 years old and 44% of gamers are female. This shows that the games industry is moving away from the image that games are just for kids, or only a boys club. 74% of gamers are over 18 according to their information, which backs up this change.

3.6 Implications and Plans

It's looking increasingly likely that VR will become a dominating platform in the coming years, and as such, All the Way Down will be developed with a VR option to cater to this rising market. kickStarter is something the team is considering, to ensure there is a community interest, as well as to acquire the initial funding for the game. The game will be developed transparently and alongside fans to guarantee the fans get the product they want to play. The game will be published independently due to the ease of release on the targeted platforms. Unreal Engine 4 will be used for development of the game because of the teams' previous experience with the platform, as well as to speed up development time. A supporting app for the game released on mobile is something the team is considering, but this would not be revisited until after the main game release. Due to the low cost and high potential for drawing in more customers, along with one team members' experience with the technology, 3D printing integration with the game is something the team is considering for the game. Using YouTube and Twitch to help market the game is a part of the teams' marketing plan. By ensuring the game is as fun to watch as it is to play, the game has a higher chance of becoming popular in these viewer based communities. Since the game is competitive at its core, it has potential to be an e-sports contender, even if this is unlikely. Parents advocating for games to their children is good for the industry, and the design of the game means it is child-friendly and therefor this will be positive for the game.

3.7 Profile of Competitors

In terms of direct competitors, All the Way Down does not have a competing product or service. Simply put, there are no downhill mountain biking games on the targeted platforms. Indirect competitors would be the mobile games industry in general, and large game releases from the big publishers. This has been taken into account in the game release plan, so this problem is generally avoided, and there is nothing to be done about mobile games eating into the sales of PC games.

3.8 Competitive Advantage

All the Way Down is the only mountain biking game there is on the selected platforms. The VR technology planned for the game is a new and very appealing technology that fits well with the concept of the game itself. The planned price for the game is relatively competitive at €30, and this was the most appealing price point based on potential customers who were surveyed. Releasing on multiple platforms means the game will release to a wide user base, which will foster a strong community for future releases.

3.9 Benefits to Clients

One of the users interested in All the Way Down wrote “As a rider with a bone spur on one of his vertebra and hasn't been able to ride lately, I give you my energy to go forth and kick ass!”. This shows the game is particularly interesting to injured bikers, which is fairly common in such an extreme sport. Since the game will have tracks in real-world locations, it would allow players to view and practice terrains in a variety of weather conditions, while saving a lot of money for the user in terms of cost of travel. Weather is also a strong factor in whether or not a rider can actually go out and practice on a track. The game is expected to be particular popular with downhill mountain bikers in their downtimes, like in winter months when the weather prevents them from enjoying their sport. It’s also a much cheaper alternative for those who can’t afford to travel the world with their mountain bike.

4.0 Marketing and Sales Strategy

4.1 Marketing Strategy

The company's first title, *All the Way Down*, will target the section of the market where those who participate in mountain biking and play video games overlap, there will be a heavier emphasis placed on video gamers as this is a much larger market.

All the Way Down brings a realism not found in any other games of its kind. The game uses real-world environments famous for tracks and creates its own adrenaline fuelled downhill mountain biking tracks. This will allow amateurs to experience, and professionals to relive, the exhilaration of some of the top mountain biking locations in the world. The product can allow avid mountain bikers to visit trails from across the world without having to pay for the journey or being limited by weather conditions.

The company has currently identified 96 of 100 people who have displayed interest in the product through a survey available from a reddit thread based on mountain biking, along with this thread receiving 132 upvotes and 57 individual comments. The product has been distributed to several avid gamers with the intended purpose of play testing and user feedback. Feedback received to date has been excellent, and the product has been described as being difficult yet highly enjoyable. The only criticisms received have been in regards to minor issues.

The Union Cycliste Internationale (UCI) is the governing body for all forms of competitive cycling, they oversee the world championships. The UCI can be used to advertise at their events. The International Mountain Biking Association (IMBA) is a nonprofit organization throughout the world. They have over 32,000 members with more than 600 affiliated clubs. The IMBA can be used to directly reach out to all of its members and raise further awareness in the mountain biking community. Through sponsorships, "Let's plays" on YouTube can be used to generate awareness in the games community as well as advertising through YouTube's True View advertising system. Advertising campaigns across social media, Facebook, Twitter, Instagram and television can raise awareness through society as a whole.

All marketing to date and in the future has and will be taken on by staff of the company.

4.2 Sales Strategy

The product will be available for purchase directly through Steam, PlayStation Store and Xbox Live Market place. These are the largest online market places in the world for games. As they are online marketplaces they can be accessed from anywhere in the world so long as there is internet available. As the main marketing strategy is aimed at online marketing through social media and YouTube, a link to purchase the game on any of these market places can be added to any post or video description. Those who purchase the product through these market places receive a digital version of the product to be downloaded directly to their computer. This removes the cost for blu-ray discs, their protective cases, the printed sleeves for the cases, logistics, shipping, publishing, and retailer charges. Steam, PlayStation Store and Xbox Live Market Place do however take 30% of all sales as a fee.

4.3 Pricing

The product is unique in the fact that there hasn't been any downhill mountain bike games aimed at realistic representation of real world locations. The closest competitor to this product is a game called "Shred" with a cost of €6.00 on the Steam marketplace. This game is not realistic however. By taking the prices of the top 10 sports games on Steam and finding their average price, €34.99, and taking into account the price preferences from surveys it would appear that €30.00 is a very reasonable price that the majority of people interested in the product would be willing to pay.

4.4 Marketing and Communications Strategy

Using social media sites such as Facebook and Twitter the company can have continuous, free marketing through the creation of an account. This account can be used to keep the target market interested by updating them with the latest news about the game and “sneak peak” images giving a behind the scenes look at development. The company can also use social media to get constant feedback from any in-game footage it chooses to share or any possible ideas it has to enhance the gameplay. This input from the community will allow Margin of Error to ensure the product is what people want and allows the community to feel more engaged in the product. This form of advertising should only take place when the game is at an alpha stage, close to beta. This gives a shorter waiting time for any who would wish to play test the game during beta, but also ensures the team has the time it needs to make changes based on community feedback.

Once the beta is released the team will bombard Let's Plays from YouTube. Many Let's Plays do not charge indie companies to play their games as the feel they are making enough from YouTube and other sponsorships, these are the ones we will be targeting. Some of these Let's Plays receive between 300,000 (Little Lizard Gaming Channel) and 3,000,000 (pewdiepie) views per video for its first week online. Those viewing these games are also mainly gamers themselves. All videos displayed by these Let's Plays also have a chance to have links to the game's Facebook, Twitter, Steam, PlayStation Store and Xbox Live Market Place accounts, to allow people to contact the company directly or purchase the game either during beta or when they come across the video.

The final section to the online campaign is to employee YouTube's True View advertising system, this allows the company to control how much it spends per day on advertising: Advertisements are only charged if the entire video or 30 seconds or more of the video is watched, also using True View the company can target people who regularly watch mountain biking videos or videos based on games. This ensure the budget for advertising is not used on any persons other than those whom the company wishes to target. The average cost of a viewed add on YouTube is 7 cents. A campaign that starts two months before the release of the product and continues for one month after, at 3000 views per day would cost €18,900.

To raise further awareness within the downhill mountain biking community the team will be will reach out to the International Mountain Biking Association. This is a non-profit organisation and one of the largest mountain biking association in the world affiliated with over 32,000 downhill mountain bikers across 600 clubs located in over 18 different countries. The goal is to have the IMBA directly reach out and inform its members of All the Way Down with emphasis on the use of real world locations for tracks. This advertising source cannot be guaranteed, but will be pursued from all possible angles.

5.0 Research and Development

5.1 Development Activities and Timelines

5.1.1 Core Engine Development

Core engine development involves setting a stable base for the game to be developed from. Initial development has shown issues with elements such as the physics engine which will need further development time before progressing onto a fully-fledged release. This will also cover the development of additional tools and features needed for the final game which are needed independently of additional content. The core engine development acts as a solid base from which to work from during the project.

5.1.2 Content Development

Initial development has included the completion of things like a single level as well as a single mountain bike. The end product involves a lot more content along these lines, for example the targeted number of tracks for the released game with be 20. Other things that also fall into this category is the further development of new art and sound assets. This type of work is independent of the core development and can progress in parallel and then carry on when the core development finishes. Most of the work needed for developing DLC for the game will be in this category as the base structure for the game will not change, designers will simply add additional content. In some cases Core Development and R&D feature goals will be concentrated around the improvement of the workflow for content development.

5.1.3 Research and Development

The platform used for the game is the game engine Unreal Engine 4. UE4 is an ongoing software project which receives frequent updates which add new features and improved workflows. Most releases are reasonably backward compatible although there is still a large amount of work to keep up to date with the latest release. In return for this we can take advantage of new features as they are released. In the past this has included key improvements such improved landscape editors in release 4.8, and improved VR support for different platforms in 4.9.

R&D will also involve the process of improving the content development for the game. Workflows are often iterated into a state where it is very specific to the game at hand, and many industry tools become redundant. Developing our own tools to help with very specific tasks, such as designing new tracks for the game or laying out sound cues throughout different levels, as these are not very common activities where tools are available.

5.1.4 Quality Assurance

The Quality Assurance activities are focused around playtesting of the current iteration of the game to discover bugs in the process as well as to get early feedback on the value of different features in the game. By testing the development efforts early the team is able to evaluate what its priorities should be when planning development objectives. A planned core game mechanic which is supposed to be fun and keep the user entertained might end up being boring in reality and should be de-prioritized. Defect management will be the other main activity involved in QA, which will be about keeping the ongoing quality of the product very high over time. By using a methodology where the team always keeps a live and working version of the game it can avoid long periods of development where introduced bugs go unnoticed. The defect management process will also impact the level of commitment possible towards the core development particularly towards the release of the core game.

5.1.5 Localization

As the game will be developed primarily by an English-speaking team for an English-speaking audience the company will need to commit some time to localisation for different markets. This is one of the areas in the project that the team has the least experience with and so will likely involve the use of outside external parties. The company has spoken to people who work in this field to get an idea of what the process involves, and while the initial activity includes translating the content of the game into different languages the bulk of the work involves verifying the content of the game is suitable in the context of different cultures.

5.2 Milestones

The project will consist of six key milestones which will act as a benchmark for the team to aim for. These are shown on the following timeline and can be outlined as followed:

Milestone 1 - Content Half-life - Dec. 31, Q4 2016

This milestone will act as a benchmark for the content creation for the game. The goal at this point will to have half of the overall tracks for the main game completed, which at this stage of planning will be 10 tracks. This will allow us to evaluate the speed at which we are creating new tracks and have to option of revisiting some of our goals.

Milestone 2 - Core Dev. Complete - June 30, Q2 2017

Core Development Complete is the point at which the core components of the game should be finished and the team stops adding new large features. This frees up more development time to pursue QA activities as well as other projects within the company.

Milestone 3 - All the Way Down Released - Dec. 6, Q4 2017

This is the point at which Margin of Error will release the main game of All the Way Down. This is an attractive delivery date--to be out in time for the boost in Christmas sales. At this point the team intends to have reached its 20 tracks goal and have delivered all core features. No new features are planned to be incorporated from this point on for any of the new DLC.

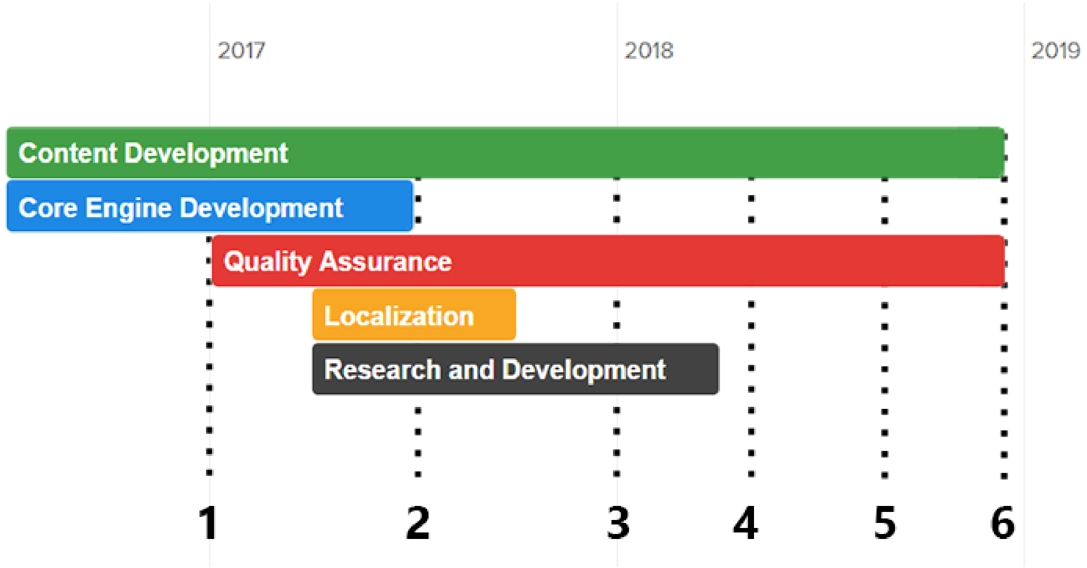
Milestone 4 - DLC Pack 1 Released - March 23, Q2 2018

Milestone 5 - DLC Pack 2 Released - July 20, Q3 2018

Milestone 6 - DLC Pack 3 Released - Nov. 23, Q4 2018

All three of the DLC packs will involve an additional 5 tracks each of new content for the game. They will each focus on a separate theme or locations from different corners of the globe, following the premise of the main game. The modular design of the game will allow a lot of freedom here and the team can be flexible with what themes to pursue based on user feedback, as the game will be on general sale by this point.

5.3 Timeline



5.4 Technical Partners

As the team is using the Unreal Engine platform, it's developer (Epic Games) is naturally the company's most involved technical partner. Margin of Error will be entangled in the UE4 workflow which will be very hard to move away from and the team will be dependent on continued support from the Epic Games team. Developers on the Unreal 4 platform have overwhelmingly reported positive experiences in their relationship with Epic Games. The team does not envision an issues arising from its dependence on the platform. The direction of the UE4 engine is also shaped by the needs of the developers using it, so as the success of the game grows so does your influence on the platform.

As mentioned in the section on localization activities, the company's technical partner in this space is Anya Oleynikova, from Moscow. Anya works in translation services and speaks 5 languages. Her role to date has involved introducing the company to the process of localization and the likely problems that will be encountered along the way. With this assistance the company is able to introduce preventative measures to make the process as smooth as possible when the localization stage of development begins.

5.5 Trademarks

There will be two main areas in the project which will need to involve the protection of trademarks:

- The first trademark that will be needed will be for the company name and logo of Margin and Error. One of the few areas of value that will come of a successful project is the reputation of the development team. In the event of our first project being a success we want to be able to carry that momentum forward and use our existing reputation on further projects. This will particularly help with selling future games to players familiar with the existing brand of the company.
- The other main trademark needed will be for the actual brand of the game, All the Way Down. The design of the game is very open ended in the sense that there is a lot a possible future content that could result in further downloadable content or even result in a franchise of games down the road. The brand imagery is then important to protect to avoid any encroachment into possible market share of the game while maintaining some easy barriers of entry for possible competitors.

6.0 Staffing and Operations

6.1 Ownership

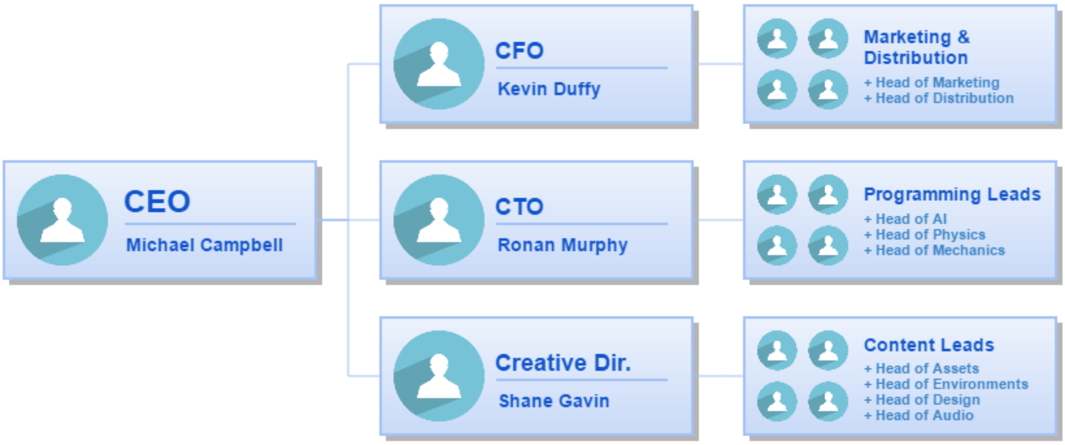
Margin of Error is registered as a limited company in the Republic of Ireland. 90% of the company's stocks have been allocated to its owners, with the remaining 10% held as an option pool for potential employees. Shares have been distributed at a rate of €1.00 per share. Investment will be sought on the basis of allocating non-voting shares. The current ownership of the company, and founder investment, is detailed in the table below.

Shareholder Name	% Shareholding	Cash Investment
Ronan Murphy	15%	€3000
Shane Gavin	15%	€3000
Kevin Duffy	15%	€3000
Michael Campbell	15%	€3000
Brian Smullen	15%	€3000
Mark Barry	15%	€3000

(10% of company stock has been held in reserve as an option pool).

6.2 Management Structure

Currently, all company owners occupy several roles within the organisation. To allow for future expansion, a clear management structure has been formulated, as detailed in the following diagram and role descriptors.


CEO
Michael Campbell
CFO
Kevin Duffy
CTO
Ronan Murphy
Creative Dir.
Shane Gavin
Marketing & Distribution
+ Head of Marketing
+ Head of Distribution
Programming Leads
+ Head of AI
+ Head of Physics
+ Head of Mechanics
Content Leads
+ Head of Assets
+ Head of Environments
+ Head of Design
+ Head of Audio

6.2.1 CEO: Michael Campbell

Michael's role as Chief Executive Officer is to guide the company's overall direction and to ensure that day-to-day operations progress the company towards its goals. In addition to this role, Michael currently serves in the following positions for Margin of Error:

- Head of Physics for Game Development
- Scrum Master

6.2.2 CFO: Kevin Duffy

Kevin's role as Chief Financial Officer is to manage the company's financial and regulatory positions and requirements, and to manage the company's marketing and distribution strategies. In this capacity, Kevin reports directly to the CEO. In addition to this role, Kevin currently serves in the following positions for Margin of Error:

- Head of Audio for Game Development
- Head of Distribution

6.2.3 CTO: Ronan Murphy

Ronan's role as Chief Technology Officer is to guide the technical components of development, lead research and development efforts, and manage all heads of programming. In this capacity, Ronan reports directly to the CEO. In addition to this role, Ronan currently serves in the following positions for Margin of Error:

- Head of Game Mechanics
- Head of Quality Control and User Testing

6.2.4 Creative Director: Shane Gavin

Shane's role as Creative Director is to guide the non-technical components of development, to guide the day-to-day operations of game development, and to manage all content leads. In this capacity, Shane reports directly to the CEO. In addition to this role, Shane currently serves in the following positions for Margin of Error:

- Head of Artificial Intelligence for Game Development
- Head of Design (Visual and Graphic Design)

6.2.5 Head of Environments for Game Development: Brian Smullen

Brian's role as Head of Environments for Game Development is to research, design, and implement level topography in all game projects. Brian will also be responsible for management of any future level designers added to the team. In this capacity, Brian reports directly to the Creative Director. In addition to this role, Brian currently serves in the following positions for Margin of Error:

- Head of Marketing

6.2.6 Head of Assets for Game Development: Mark Barry

Mark's role as Head of Assets for Game Development is to design and implement all non-audio assets for all game projects. This includes the production of all 3D models and associated animations. Mark will also be responsible for management of any future asset creators added to the team. In this capacity, Mark reports directly to the Creative Director. Due to the scope of this role, Mark has been exempted from additional undertakings in the company.

6.3 Staffing Expansion (Years 1 to 3)

Margin of Error has been developed around the concept of small, integrated, agile teams who adapt to project needs as they arise. As such, the company does not intend to hire additional staff in its first 3 years of business. Hiring policy will be reviewed on an as-needed basis.

6.4 Continuous Training and Upskilling

Given the nature of its business, Margin of Error will not seek outside training on core tools beyond those freely available to all users. Informal, internal training will be guided by the outcome of R&D efforts and cross-discipline team work.

Employees in a technical capacity at the company are expected to keep current on developments in their field. All employees will be allowed 1 day in each calendar month to devote to self-motivated training and upskilling. Where employees are assigned a task outside of their current skill set, this task's deadline will be set with additional research needs in mind.

In exceptional circumstances, requests for external training from employees will be dealt with on a case-by-case basis.

If the situation arises where new employees are added to the company in the first 3 years of business, the head of their department will commit to providing on-the-job training to include disclosure of company culture, policies and procedures, and training in the company's core tools.

6.5 Operations

6.5.1 General Operations

Margin of Error is a remote work business. The company does not, currently, use dedicated office space. Employees work from home with meetings held over internet telephony services. To minimise start-up costs in the first 3 years of business, the company owners have agreed to use their own equipment and facilities without subsistence from the company. The company will not contribute to work-from-home costs (electricity, phone lines etc.)

Requirements for day-to-day running of the business have necessitated the purchase of 2 high-end computer work stations, purchase of, and subscription to, various software services (detailed in accounts).

6.5.2 Start-up Costs of Operation

The following tables detail the start-up costs of operation for Margin of Error:

Hardware Costs	€ (euro)
Computers	4190.00
Camera	139.00
Printer	218.00
Total :	4547.00
Software / Resources	€ (euro)
Substance Designer	880.00
Sublime Text 3	62.00
Total :	942.00
Miscellaneous Costs	€ (euro)
Trademark Costs	140.00
Localisation	640.00
Foreign Ratings Boards (PEGI,ESRB)	1800.00
Steam Greenlight	100.00
Company Registration	90.00
Total :	2770.00

Equipment and software allocated to employees for work-from-home use is authorised for company use only, and as such is not considered to be benefit in kind.

6.5.3 Recurring Costs of Operation

The following tables detail the recurring running costs of operation for Margin of Error:

Monthly Subscriptions	€ (euro)
BitBucket	9.00
Web Hosting	3.00
Google Drive	9.00
Confluence	9.00
MonsterCat	13.00
Total (monthly):	43.00
Yearly Subscriptions	€ (euro)
Creative Cloud	147.00
Domain Name	7.00
Errors and Omissions Insurance	3000.00
Total (yearly):	3154.00

6.5.3 Sales-based Costs of Operation

The following table details the costs of operation for Margin of Error which are directly tied to sales figures:

Monthly Subscriptions	% of sales
Sales on Steam platform	30.00%
Unreal 4 Engine Licensing (exempt below $3000 of sales)	5.00%

7.0 Financial Projections

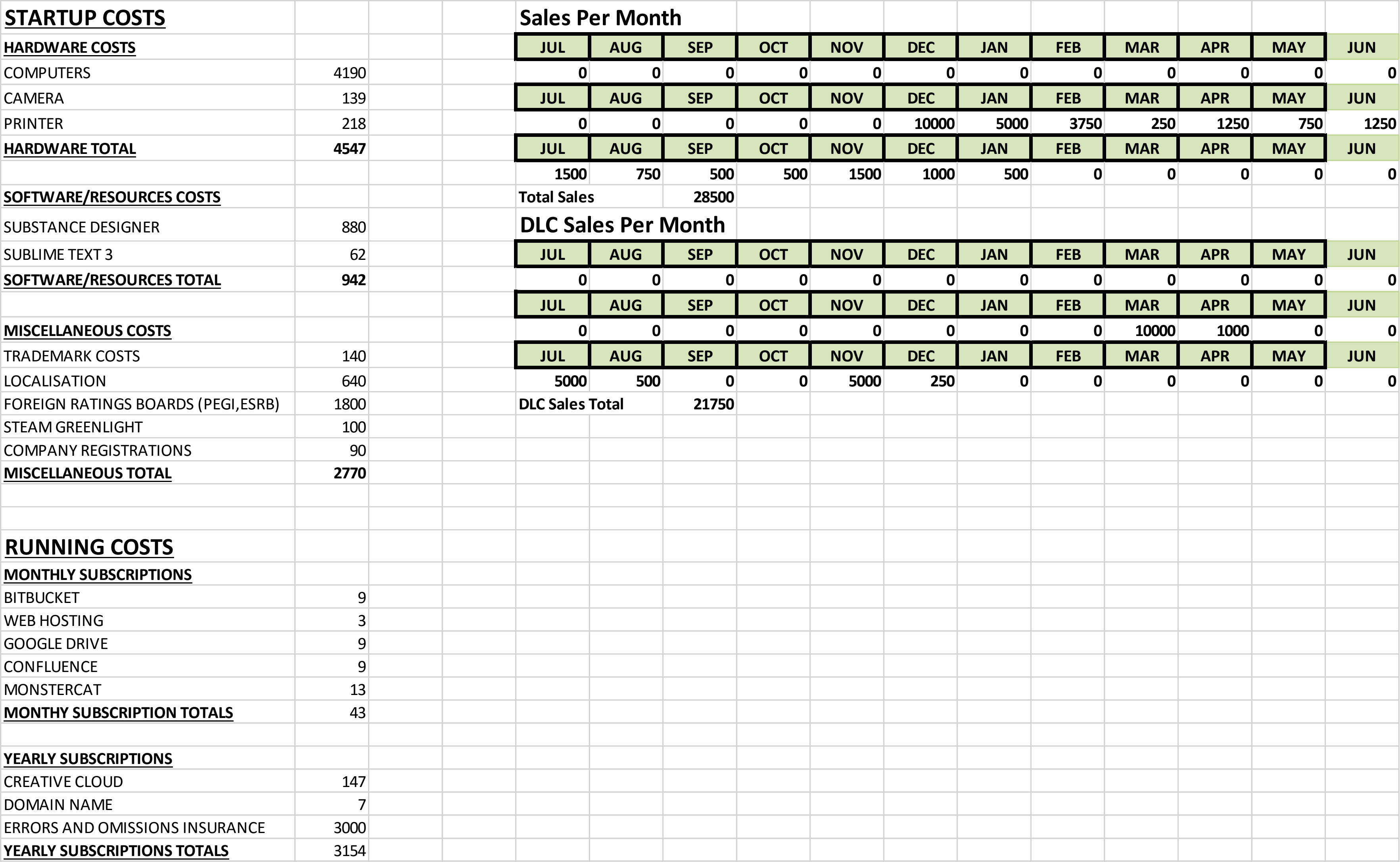
7.1 Income Assumptions

- All The Way Down will accrue 28500 sales between Q1 of Y2 and Q3 of Y3 across 3 different platforms. The largest market is approximately 16500 units sold on steam this half that of the average sales for games on steam. Sales for other platforms are based off the results found in Appendix I.
- DLC (Downloadable Content) figures calculate in accordance with research done by Fred Dutton of Eurogamer which found around 51% of people buy DLC's. (Dutton, 2011).

7.2 Expenses Assumptions

- Depreciation of computer hardware was not considered due to the ease of upgrading individual parts
- All software costs calculated based on either a lifetime licence, yearly or monthly subscriptions.
- Rented office space was considered in a prime location at €2,000 a month including all utilities and bills but was removed due to budgetary restrictions
- Total employment figures of 6 personnel paid at €20,000 a year plus yearly shareholders dividend

7.3 Costs and Sales



STARTUP COSTS

HARDWARE COSTS	
COMPUTERS	4190
CAMERA	139
PRINTER	218
HARDWARE TOTAL	**4547**
SOFTWARE/RESOURCES COSTS	
SUBSTANCE DESIGNER	880
SUBLIME TEXT 3	62
SOFTWARE/RESOURCES TOTAL	**942**
MISCELLANEOUS COSTS	
TRADEMARK COSTS	140
LOCALISATION	640
FOREIGN RATINGS BOARDS (PEGI,ESRB)	1800
STEAM GREENLIGHT	100
COMPANY REGISTRATIONS	90
MISCELLANEOUS TOTAL	**2770**

RUNNING COSTS

MONTHLY SUBSCRIPTIONS	
BITBUCKET	9
WEB HOSTING	3
GOOGLE DRIVE	9
CONFLUENCE	9
MONSTERCAT	13
MONTHY SUBSCRIPTION TOTALS	43
YEARLY SUBSCRIPTIONS	
CREATIVE CLOUD	147
DOMAIN NAME	7
ERRORS AND OMISSIONS INSURANCE	3000
YEARLY SUBSCRIPTIONS TOTALS	3154

Sales Per Month

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
0	0	0	0	0	0	0	0	0	0	0	0

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
0	0	0	0	0	10000	5000	3750	250	1250	750	1250

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
1500	750	500	500	1500	1000	500	0	0	0	0	0

Total Sales **28500**

DLC Sales Per Month

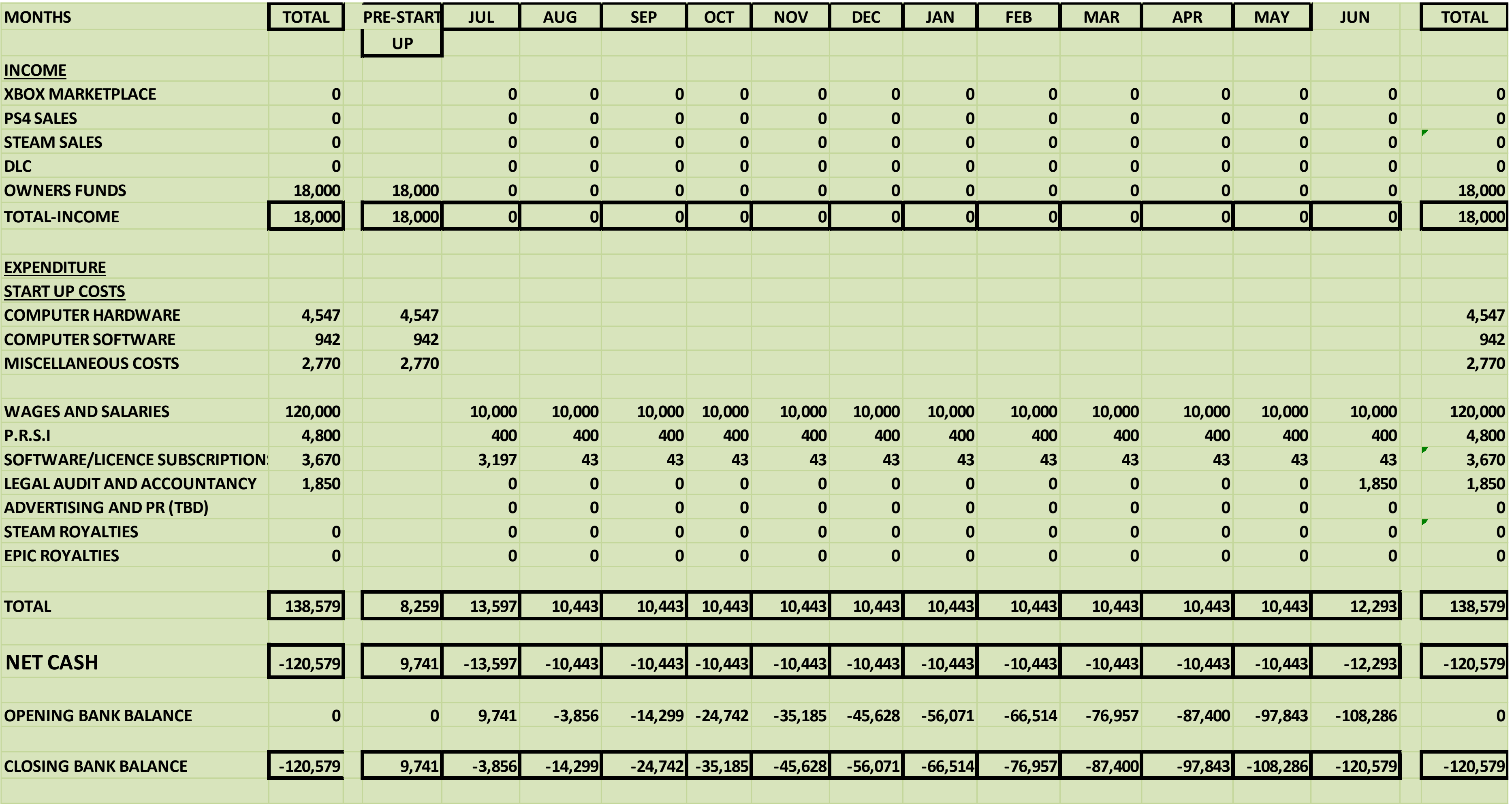
JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
0	0	0	0	0	0	0	0	0	0	0	0

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
0	0	0	0	0	0	0	0	10000	1000	0	0

JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
5000	500	0	0	5000	250	0	0	0	0	0	0

DLC Sales Total **21750**

7.4 Monthly Cash Flow 2016/17

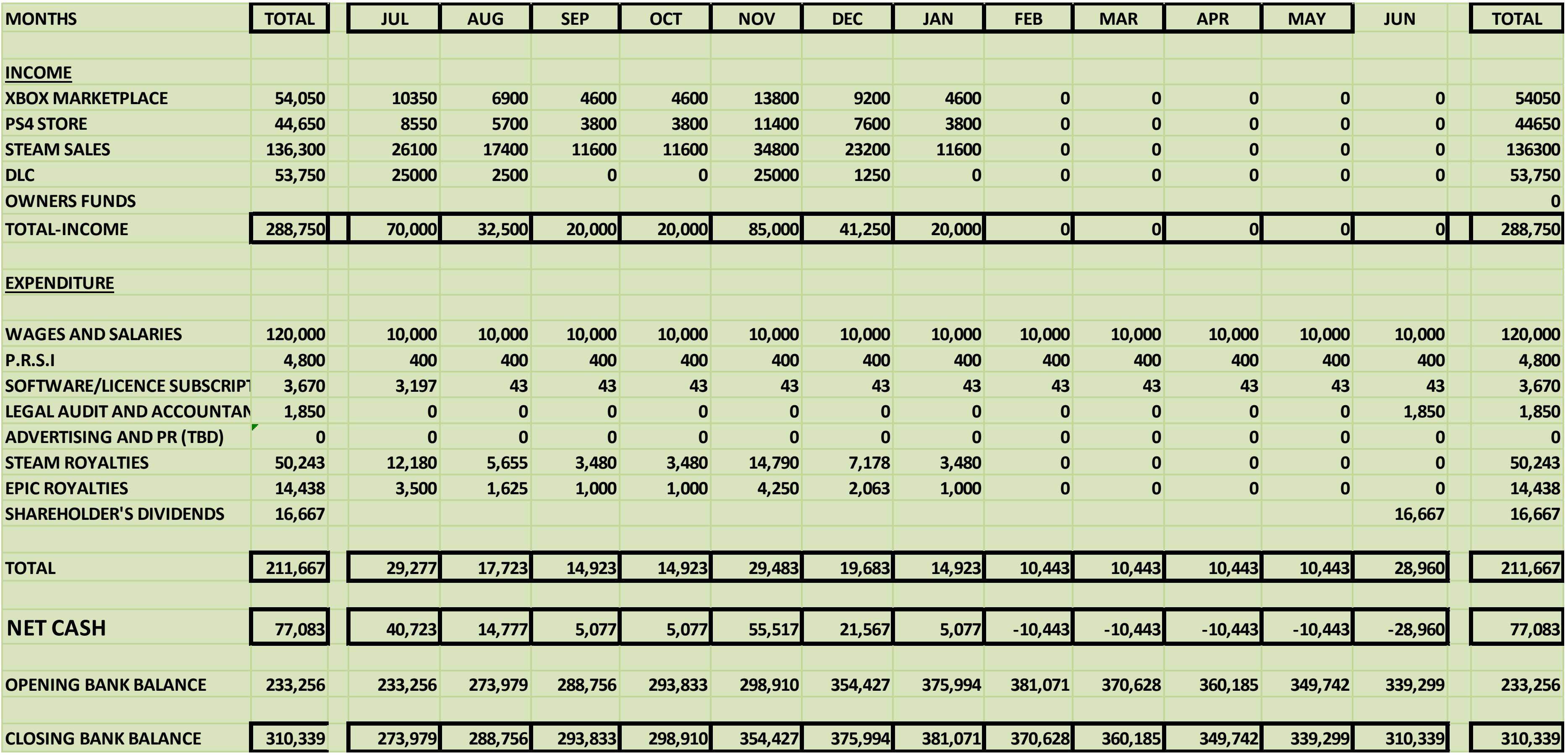


MONTHS	TOTAL	PRE-START UP	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
INCOME															
XBOX MARKETPLACE	0		0	0	0	0	0	0	0	0	0	0	0	0	0
PS4 SALES	0		0	0	0	0	0	0	0	0	0	0	0	0	0
STEAM SALES	0		0	0	0	0	0	0	0	0	0	0	0	0	0
DLC	0		0	0	0	0	0	0	0	0	0	0	0	0	0
OWNERS FUNDS	18,000	18,000	0	0	0	0	0	0	0	0	0	0	0	0	18,000
TOTAL-INCOME	18,000	18,000	0	0	0	0	0	0	0	0	0	0	0	0	18,000
EXPENDITURE															
START UP COSTS															
COMPUTER HARDWARE	4,547	4,547													4,547
COMPUTER SOFTWARE	942	942													942
MISCELLANEOUS COSTS	2,770	2,770													2,770
WAGES AND SALARIES	120,000		10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	120,000
P.R.S.I	4,800		400	400	400	400	400	400	400	400	400	400	400	400	4,800
SOFTWARE/LICENCE SUBSCRIPTION	3,670		3,197	43	43	43	43	43	43	43	43	43	43	43	3,670
LEGAL AUDIT AND ACCOUNTANCY	1,850		0	0	0	0	0	0	0	0	0	0	0	1,850	1,850
ADVERTISING AND PR (TBD)			0	0	0	0	0	0	0	0	0	0	0	0	0
STEAM ROYALTIES	0		0	0	0	0	0	0	0	0	0	0	0	0	0
EPIC ROYALTIES	0		0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	138,579	8,259	13,597	10,443	10,443	10,443	10,443	10,443	10,443	10,443	10,443	10,443	10,443	12,293	138,579
NET CASH	-120,579	9,741	-13,597	-10,443	-10,443	-10,443	-10,443	-10,443	-10,443	-10,443	-10,443	-10,443	-10,443	-12,293	-120,579
OPENING BANK BALANCE	0	0	9,741	-3,856	-14,299	-24,742	-35,185	-45,628	-56,071	-66,514	-76,957	-87,400	-97,843	-108,286	0
CLOSING BANK BALANCE	-120,579	9,741	-3,856	-14,299	-24,742	-35,185	-45,628	-56,071	-66,514	-76,957	-87,400	-97,843	-108,286	-120,579	-120,579

7.5 Monthly Cash Flow 2017/18

MONTHS	TOTAL	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
INCOME														
XBOX MARKETPLACE	153525	0	0	0	0	0	69000	34500	25875	1725	8625	5175	8625	153525
PS4 STORE	126825	0	0	0	0	0	57000	28500	21375	1425	7125	4275	7125	126825
STEAM SALES	387,150	0	0	0	0	0	174000	87000	65250	4350	21750	13050	21750	387,150
DLC	55,000	0	0	0	0	0	0	0	0	50000	5000	0	0	55,000
OWNERS FUNDS														0
TOTAL-INCOME	722,500	0	0	0	0	0	300,000	150,000	112,500	57,500	42,500	22,500	37,500	722,500
EXPENDITURE														
WAGES AND SALARIES	120,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	120,000
P.R.S.I	4,800	400	400	400	400	400	400	400	400	400	400	400	400	4,800
SOFTWARE/LICENCE SUBSCRIPT	3,670	3,197	43	43	43	43	43	43	43	43	43	43	43	3,670
LEGAL AUDIT AND ACCOUNTAN	1,850	0	0	0	0	0	0	0	0	0	0	0	1,850	1,850
ADVERTISING AND PR (TBD)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STEAM ROYALTIES	125,715	0	0	0	0	0	52,200	26,100	19,575	10,005	7,395	3,915	6,525	125,715
EPIC ROYALTIES	36,125	0	0	0	0	0	15,000	7,500	5,625	2,875	2,125	1,125	1,875	36,125
SHAREHOLDER'S DIVIDENDS	76,505												76,505	76,505
TOTAL	368,665	13,597	10,443	10,443	10,443	10,443	77,643	44,043	35,643	23,323	19,963	15,483	97,198	368,665
NET CASH	353,835	-13,597	-10,443	-10,443	-10,443	-10,443	222,357	105,957	76,857	34,177	22,537	7,017	-59,698	353,835
OPENING BANK BALANCE	-120,579	-120,579	-134,176	-144,619	-155,062	-165,505	-175,948	46,409	152,366	229,223	263,400	285,937	292,954	-120,579
CLOSING BANK BALANCE	233,256	-134,176	-144,619	-155,062	-165,505	-175,948	46,409	152,366	229,223	263,400	285,937	292,954	233,256	233,256

7.6 Monthly Cash Flow 2018/19



MONTHS	TOTAL	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
INCOME														
XBOX MARKETPLACE	54,050	10350	6900	4600	4600	13800	9200	4600	0	0	0	0	0	54050
PS4 STORE	44,650	8550	5700	3800	3800	11400	7600	3800	0	0	0	0	0	44650
STEAM SALES	136,300	26100	17400	11600	11600	34800	23200	11600	0	0	0	0	0	136300
DLC	53,750	25000	2500	0	0	25000	1250	0	0	0	0	0	0	53,750
OWNERS FUNDS														0
TOTAL-INCOME	288,750	70,000	32,500	20,000	20,000	85,000	41,250	20,000	0	0	0	0	0	288,750
EXPENDITURE														
WAGES AND SALARIES	120,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	120,000
P.R.S.I	4,800	400	400	400	400	400	400	400	400	400	400	400	400	4,800
SOFTWARE/LICENCE SUBSCRIPT	3,670	3,197	43	43	43	43	43	43	43	43	43	43	43	3,670
LEGAL AUDIT AND ACCOUNTAN	1,850	0	0	0	0	0	0	0	0	0	0	0	1,850	1,850
ADVERTISING AND PR (TBD)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
STEAM ROYALTIES	50,243	12,180	5,655	3,480	3,480	14,790	7,178	3,480	0	0	0	0	0	50,243
EPIC ROYALTIES	14,438	3,500	1,625	1,000	1,000	4,250	2,063	1,000	0	0	0	0	0	14,438
SHAREHOLDER'S DIVIDENDS	16,667												16,667	16,667
TOTAL	211,667	29,277	17,723	14,923	14,923	29,483	19,683	14,923	10,443	10,443	10,443	10,443	28,960	211,667
NET CASH	77,083	40,723	14,777	5,077	5,077	55,517	21,567	5,077	-10,443	-10,443	-10,443	-10,443	-28,960	77,083
OPENING BANK BALANCE	233,256	233,256	273,979	288,756	293,833	298,910	354,427	375,994	381,071	370,628	360,185	349,742	339,299	233,256
CLOSING BANK BALANCE	310,339	273,979	288,756	293,833	298,910	354,427	375,994	381,071	370,628	360,185	349,742	339,299	310,339	310,339

7.7 Profit and Loss Account Forecast 2016-19

Year	2016/17		2017/18		2018/19		
currency	€ euros		€ euros		€ euros		
Sales	**0**		**722,500**		**288750**		
Marketplace Royalties	**0**		**161840**		**64681**		
Cost Of Sales	**0**		**161840**		**64681**		
%			**22.40%**		**22.40%**		
Gross Profit	**0**		**560660**		**224069**		
%	**0.00%**		**77.60%**		**77.60%**		
Overheads							
Wages & Salaries	**120000**		**120000**		**120000**		
PRSI	**4800**		**4800**		**4800**		
Software Subscriptions	**3670**		**3670**		**3670**		
Legal, Audit & Accountancy	**1850**		**1850**		**1850**		
Advertising & PR	**0**		**0**		**0**		
Total Overheads	**130320**		**130320**		**130320**		
%	**0.00%**		**18.04%**		**45.13%**		
Net Profit after Interest before Corp.Tax	**-130320**		**430340**		**93749**		
%	**0.00%**		**59.56%**		**32.47%**		
Net Profit after Interest after Corp.Tax	-130320		382524.4		83332.44		
							335536.9
Shareholder Dividends	0		76505	0	16667		

7.8 Bridge Between Profit & Loss and Cash Flow

Year	2016/17	2017/18	2018/19	Total
currency	€ euros	€ euros	€ euros	€ euros
Net Profit	**-130320**	**430340**	**93749**	**393769**
Add Back				
Opening Bank Balance	**18000**	**0**	**0**	**18000**
Subtract				
Start-up Costs	**-8259**	**0**	**0**	
Shareholder Dividends	**0**	-76505	-16667	**-93172**
Net Cash Flow	**-120579**	**353835**	**77082**	**310338**
Cumulative Cash Flow	**-120579**	**233256**	**310338**	

8.0 Sales Pipeline

Name of Customer	Size of Deal	Date PO expected
Steam	16530	6th December
Xbox Marketplace	6555	6th December
PlayStation Store	5415	6th December

Based on survey conducted on platform preferences (see Appendix I)

9.0 Funding Requirements

Sources:

Shareholders Fund	- €18000

Required for:

Computer Hardware	- € 4547 once-off
Software Licences	- € 942 once-off
Software Subscriptions	- € 670 per year
Staff Salaries	- €120000 per Year
Marketing	- €100
Insurance	- €3000 per Year
Ratings Boards	- €1800 once-off
Company setup costs(CRO, Trademark)	- €230 once-off

Funding Needs:

- Cover initial loss of €190,000

Options:

1. Bank loan with repayments of €3,647.91 over 60 months.
   Pros: Bank doesn't take a stake in the business
   Cons: Introduces a creditor to the business other than the business' shareholders.

2. Angel Investors
   Pros: More likely to take preference shares with no voting rights
   Cons: Convincing someone to invest is such a deep market

3. Crowdfunding (e.g. Kickstarter)
   Pros: No repayments. Rewards system as reward for donating
   Cons: Large competition for funding

4. Enterprise Ireland Priming Refundable Grant
   Pros: Up to €80,000 with a 0% interest repayable on 0%, 33%, 50%, 100% depending on amount granted
   Cons: Very selective program with high demand, Capped at €80,000

Appendices

Appendix I:
Survey of Target Market

The link below presents the results of a survey conducted on 100 users of the Mountain Biking sub-Reddit, an active online community devoted to all things mountain biking:

https://www.surveymonkey.com/results/SM-29YHLYTS/

Click on the link above to access survey results

Appendix II: References

- IMBA (no date) *Demographics of mountain biking*. Available at: https://www.imba.com/resources/research/demographics-mountain-biking (Accessed: 17 April 2016).
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Appendix III: Costing References

Hardware:

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- http://www.harveynorman.ie/digital-cameras/go-pro-and-action/gopro-hero-edition.html

Miscellaneous costs:

- Company and Trademark costs: https://www.cro.ie/publications/fees/company
- Localisation: http://www.gamedevblog.com/2014/07/making-a-shoestring-budget-game-for-the-xbox-one.html
- Insurance: http://www.techinsurance.com/ask-us/business-insurance-costs/cost-of-errors-and-omissions-insurance
- Advertising: https://www.quora.com/How-much-does-advertising-on-YouTube-cost

Release Costs:

- http://www.eurogamer.net/articles/2014-07-30-id-xbox-dev-reveals-costs-of-launching-xbox-one-game

Appendix IV:
Distribution of Work

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of

Business Plan, Distribution of Work

Mark Barry

Section 4: Marketing Strategy (all)

Michael Campbell

Section 2: Company Overview (S.W.O.T. Analysis)

Section 3: Market Analysis (all, with Brian Smullen)

Kevin Duffy

Section 2: Company Overview (Advisors)

Section 7: Financial Projections (all, including all accounts), Elements used in various other sections

Section 8: Sales Pipeline (all)

Section 9: Funding Requirements (all)

Shane Gavin

Section 1: Executive Summary (all, excluding financial projections)

Section 2: Company Overview (all, excluding Advisors and S.W.O.T analysis)

Section 6: Operations (all, excluding financial projections)

Ronan Murphy

Section 5: Research and Development (all)

Brian Smullen

Section 3: Market Analysis (all, with Michael Campbell)