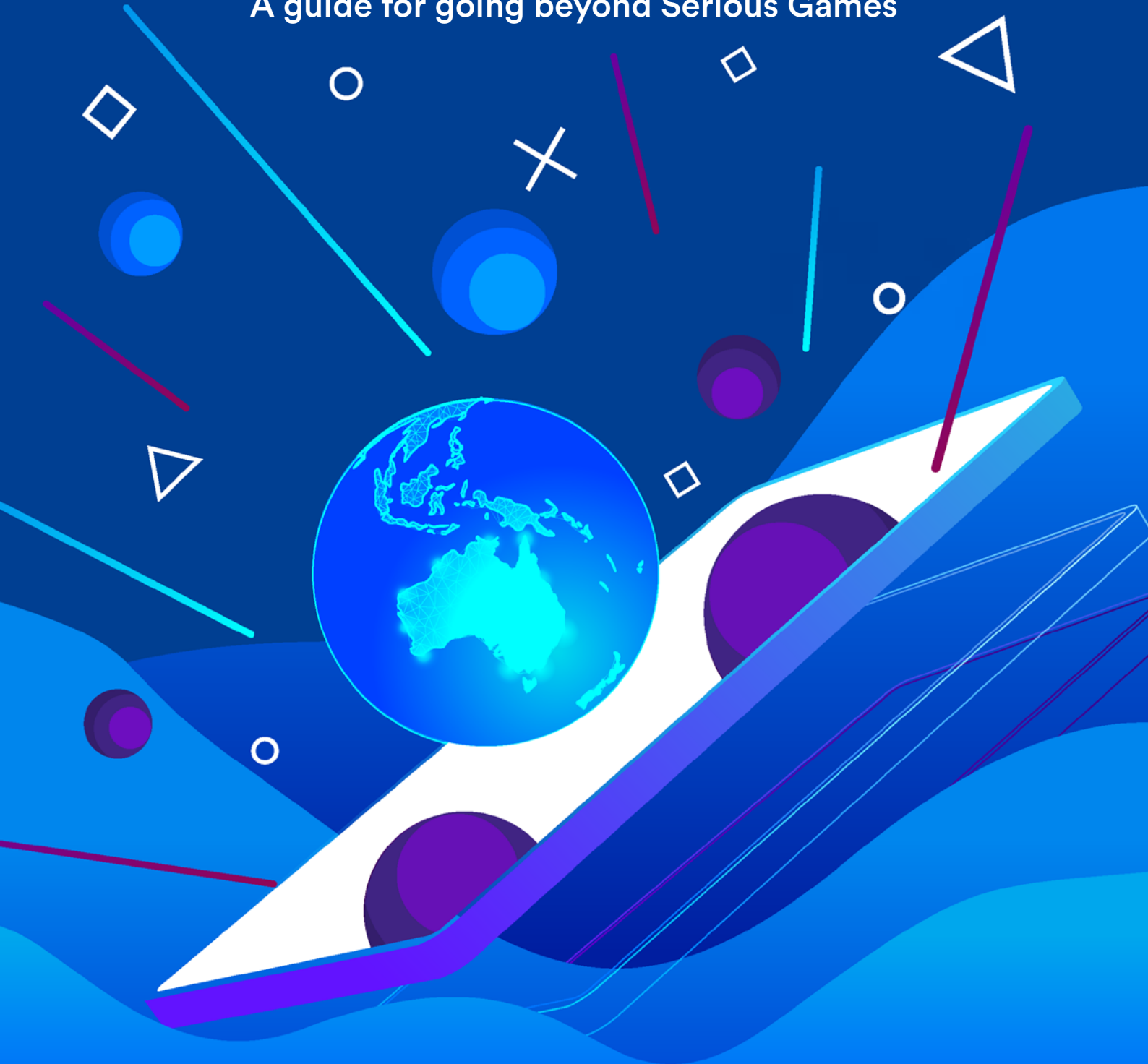


Chaos Theory

CREATE GAMES THAT SOLVE PROBLEMS

A guide for going beyond Serious Games



Written By

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THE ROAD YOU'RE ON CAN BE TRICKY, TAKE THIS GUIDE WITH YOU BEFORE YOU VENTURE AHEAD!

There are around 17 million Australians that play video games - that's roughly 68% of the total population. This statistic is similar across most countries, and with an average playtime of 83 minutes per day. That's 83 minutes a day that you could be reaching a new audience and transforming their behaviour through play!

Video games have the potential to reach across demographics and borders to unite people towards a common goal. **Games let us experience digital worlds from a first-person perspective, allowing for a more active role in the acquisition and formulation of ideas when compared to traditional media.** Video games have also become a tool for communication within our society and can provide an interactive environment for like-minded individuals to collaborate, learn, and even bring about social change.

With the rapid advancement of technology over the past 20 years there are now incredible new possibilities to solve modern problems with digital games. There are many reasons you may want to create your own game, whether it is to raise awareness, incite change within your community, or tackle a real-world problem with a unique solution.

This eBook is a practical guide to the essential first steps of creating a game that solves a real-world problem, based on our experience of developing over 150 games for our clients, which includes government organisations, charities, international brands and many more.

We want to share our knowledge and expertise in creating games that transform lives, along with some helpful tips, tricks and some awesome case studies to help inspire your next world-changing project.

**Thank you for downloading our eBook
FROM THE CHAOS THEORY TEAM**



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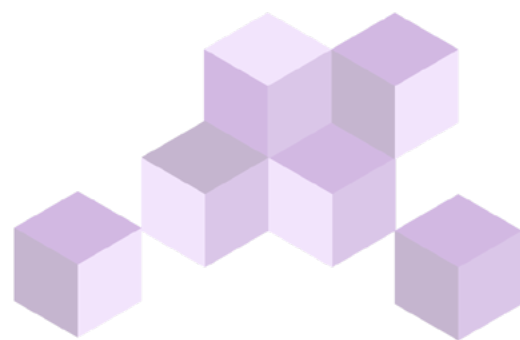
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1 INTRODUCTION

Creating a successful game is challenging. Creating a successful game that also positively impacts the lives of its players and changes the world is... well worth the effort!

The process of developing a game requires collaboration between a diverse group of individuals who all have expertise in very different fields. It is a combination of software development, creative production, psychology, business, narrative and worldbuilding, marketing, and subject matter expertise.

While the process may be challenging, the impact games can have is unmatched. Video games can deliver an intimate experience by speaking to the player directly in an interactive format as well as personalising the content for their preferences or skill level. In addition to this, they can easily scale to reach billions of people through instant digital distribution services such as the App Store, Steam, or via a web browser.

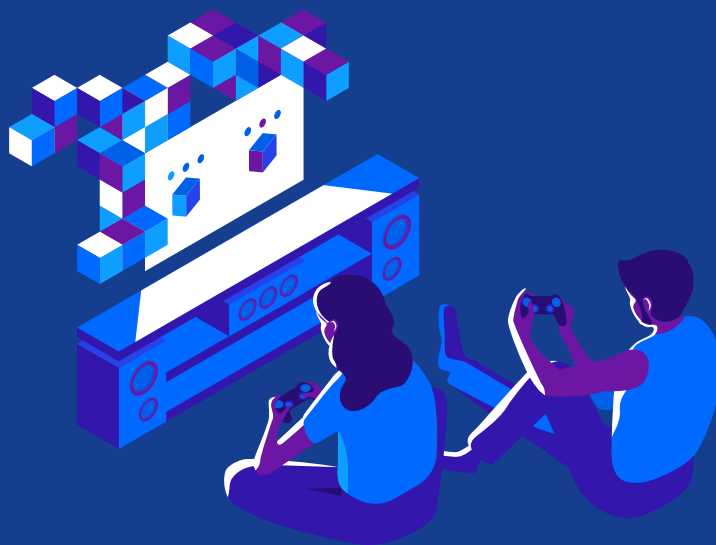
In this book, we will cover the essential information required to understand the process of creating a game with real-world impact. This information is intended for people who are unfamiliar with game or software development, and aren't sure where to start. By the end of the eBook, you should know if creating a game is the right solution for the problem that you want to solve, and have some useful tools to help you begin the process.

For more advanced readers with game development experience, there are links to additional resources and frameworks which may be the next step that you were looking for.

Transformational Games, Not Serious Games!

The exact terminology that is used to describe games that solve real-world problems is still nebulous. Serious Games, Applied Games, Games for Change, and Transformational Games - these all refer to similar things and may be used interchangeably. Being in this industry for as long as we have, we've grown fond of the term 'transformational games' over 'serious games' as we feel that it represents the kinds of experiences that we create better than 'serious games'.

In this eBook, we will use the term transformational game(s) rather than serious game(s).



DID YOU KNOW...?

According to the 2022 Digital Games report by the Interactive Games and Entertainment Association ([IGEA](#)), **92% of households** played video games during 2020, with **75% of them playing just for the social aspect**, and **36% of them playing more in 2021 than before**.

Look out for more helpful tips and facts like this!

2 TRANSFORMATIONAL GAMES: Will They Work For You?

In this section we will look at the different types of transformational games as well as their strengths and weaknesses, arming you with the information you need to identify what problems transformational games are best suited to solve.

A transformational game is any interactive system that uses human psychology as a tool to influence players and create real-world change. These are games that were built for a purpose - to teach a skill, motivate certain behaviours, or even inspire wider community involvement in a social cause. The goal is to create a change within the player that continues long after the player stops interacting with the game, such as forming a new habit or changing their perception of a particular topic.

So, what types of problems have transformational games solved in the past?



DID YOU KNOW?

The term 'transformational games' was coined by Sabrina Culyba and Schell Games in their book 'The Transformational Framework'. This framework is available for [free online](#) and is intended for experienced video game developers moving from entertainment-focused games to transformational games. If that sounds like you, or you finish this eBook and feel like you want more then we would highly recommend this resource.

TYPES OF TRANSFORMATIONAL GAMES

There are many different types of transformational games, here are a few categories that they would typically fall under:



Simulation-based Learning: Usually used to train employees on technical skills and industry procedures within a safe environment where it is ok to fail and try again.



Behaviour-change Games: Can be used to increase positive actions within an audience or identify and eliminate negative behaviours such as discrimination.



Educational Games: Powerful tools for exploring and engaging with new concepts and are being used both inside and outside the classroom.



Games for Health: Individuals are using games to help them build or maintain healthy habits, and healthcare professionals are using game in treatment and rehabilitation,



Social Impact Games: Have the goal to raise awareness for social issues, educate their audience on a topic, and often inspire massive positive action.



Empathy Games: These games are often focused on storytelling and invoking emotional responses from players to build empathy with others.



Citizen Science Games: Give scientists access to a large group of players who can gather data or solve complex problems that are critical for their research.



Fundraising Games: This can be a great way for charities or other social change purposes to raise funds to help support their cause.

DESIGNING FOR INTENT VS. ADAPTED GAMES



Transformational games can be approached in two very different ways - designing and developing a custom game for a specific purpose or adapting an existing game to meet your objectives. It is important to clearly define the objectives and key performance indicators for your game early in the process to help with deciding what method is best to reach your goals.

The targeted nature and unique presentation of games that are designed for intent can be seen in games such as Duolingo ([Duolingo](#)), which is a language-learning platform with game-style features or Win the White House ([Filament Games and iCivic](#)) which was designed to introduce and educate the public on the processes and strategy involved in the American presidential election.

Adapted games are usually games that were made for entertainment and later modified for new audiences to meet specific objectives, such as Minecraft which was adapted into Minecraft Education Edition. The massively successful '[The Uncensored Library](#)', is another great example, its an online library of news articles and resources for people living in countries with heavy censorship - developed within Minecraft! The project succeeded all expectations, gaining over 48 million impressions on social media, 25 million visits to the library itself, and a 62% increase in donations to the project spearhead - Reporters without Borders.

Regardless of if a game is designed from scratch or adapted from an existing entertainment game, the potential impact remains the same. The first step in deciding which path is right for you remains the same - start with your objective. If you can meet your objective by adapting an existing game then that may be the best path forward as you can tap into existing tools, content, and potentially an existing player base. If your objective doesn't fit well within an existing game such as Minecraft or Roblox then a custom-built game might be the best path forward.

BENEFITS AND CHALLENGES



Before deciding on how you are going to start building your game, it helps to understand the benefits and challenges of using games to solve real-world problems. Here are some that will better inform your decision:

BENEFITS

ENGAGEMENT

Games have the ability to boost engagement and increase memory recall with highly immersive and engaging environments, mechanics, and storylines.

EXPERIENTIAL LEARNING

Games provide an opportunity for practical application and skill development as players are encouraged to learn by doing. As such, transformational games can be applied to many different industries.

RETENTION

Games can lead to high long-term retention as content is delivered at a pace that works for the player, and habituation systems can be used to make play part of the daily routine.

REACH

A multitude of platforms allow for instant digital download on mobile, console, PC, and web, with widespread reach across households, schools, businesses, and healthcare practices. These platforms typically have a low cost associated with scaling to millions or billions of players.

FEEDBACK

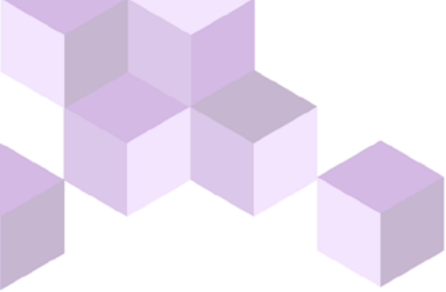
Games have an instant feedback loop where players can immediately see where they've gone wrong and how to fix it. This feedback loop is what makes transformational games so powerful in a learning environment.

MEASUREMENT

Games have measurable outcomes for both players and developers. Just like the feedback loop in the game, developers can track and measure performance and analytics in real-time to see whether the game is creating the impact it was designed to.

EXPERIMENTATION

Transformational games provide a safe environment for players to experiment and learn at their own pace, without having any severe real-life consequences.



CHALLENGES

INFO DENSITY

The “learn by doing” focus of most games makes them better at conveying skills and experiences, not large quantities of facts and formulas. If you have a lot of information to cover and complex concepts that need to be memorised for a test then traditional written content might be better suited.

REFERENCING

Games are often structured in a way where individual concepts are difficult to quickly revisit or extract from the wider experience. The player may need to play for 2 hours to find the one section that is relevant, which will make revisiting or sharing this section impractical.

TARGETED APPEAL

Player’s personal preferences of gameplay styles can impact their willingness to play your game. **If your target audience is “everyone” then games might not be a good fit as just like with food, if you need to cook a dish for “everyone” then it will likely need to be bland and boring so as not to offend.**

DIGITAL LITERACY

Players with low digital literacy can be overwhelmed or overstimulated. If your target audience includes a particular demographic, such as older, less tech-savvy people, then the game will need to be simple to be understandable.

OPT-IN

Games are usually a voluntary experience and rely on the player to volunteer their time to invest in this experience. You usually can’t force someone to play your game, especially when your goal is to change their fundamental beliefs.

VIABLE ALTERNATIVES

Sometimes a game isn’t the best solution to the problem. Video, written content, and in-person facilitation all have their own strengths and weaknesses. Make sure that you are choosing the right tool for the job.

CASE STUDY 1

UNCENSORED LIBRARY

Created by Media Monks

Industry: Political Journalism and Cyber Censorship

Application: Knowledge-sharing Platform

Platform: Minecraft (PC, Windows or Mac)

Minecraft, in collaboration with Reporters Without Borders (RSF), wanted to create a virtual space where young people could access journalistic content that was otherwise censored in their countries. The digital library could be accessed by anyone with a Minecraft account as the game's servers were not restricted to play.

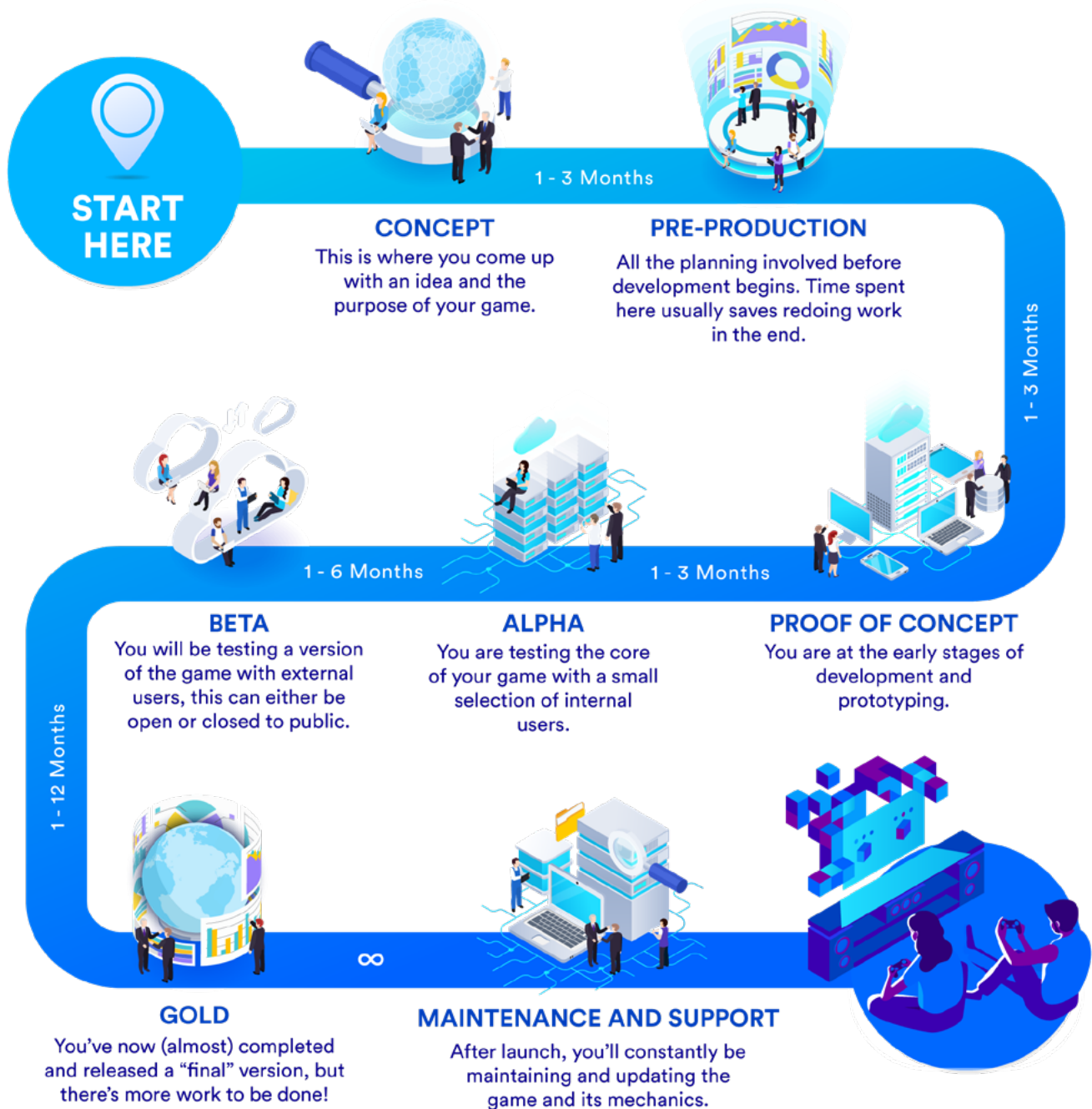
The game has over 20 million players in 165 different countries and is even being used in schools and universities as a knowledge tool. Each player can access a wing of the library pertaining to censored documents in their country. With COVID-19 and the misinformation spreading in many countries, the Uncensored Library team built and launched a new room exclusive to fact-checked and peer-research content related to the virus.

Uncensored Library shows us how a popular game such as Minecraft can be modified to achieve an objective outside of entertainment. The existing audience and very broad distribution of the game let the development team reach a scale that may not have been possible with a standalone experience that was designed from scratch. Another point to note is the nature of Minecraft's content creation features meant that new resources continue to be added after the library's release.



3 Fundamental Stages Of GAME DEVELOPMENT

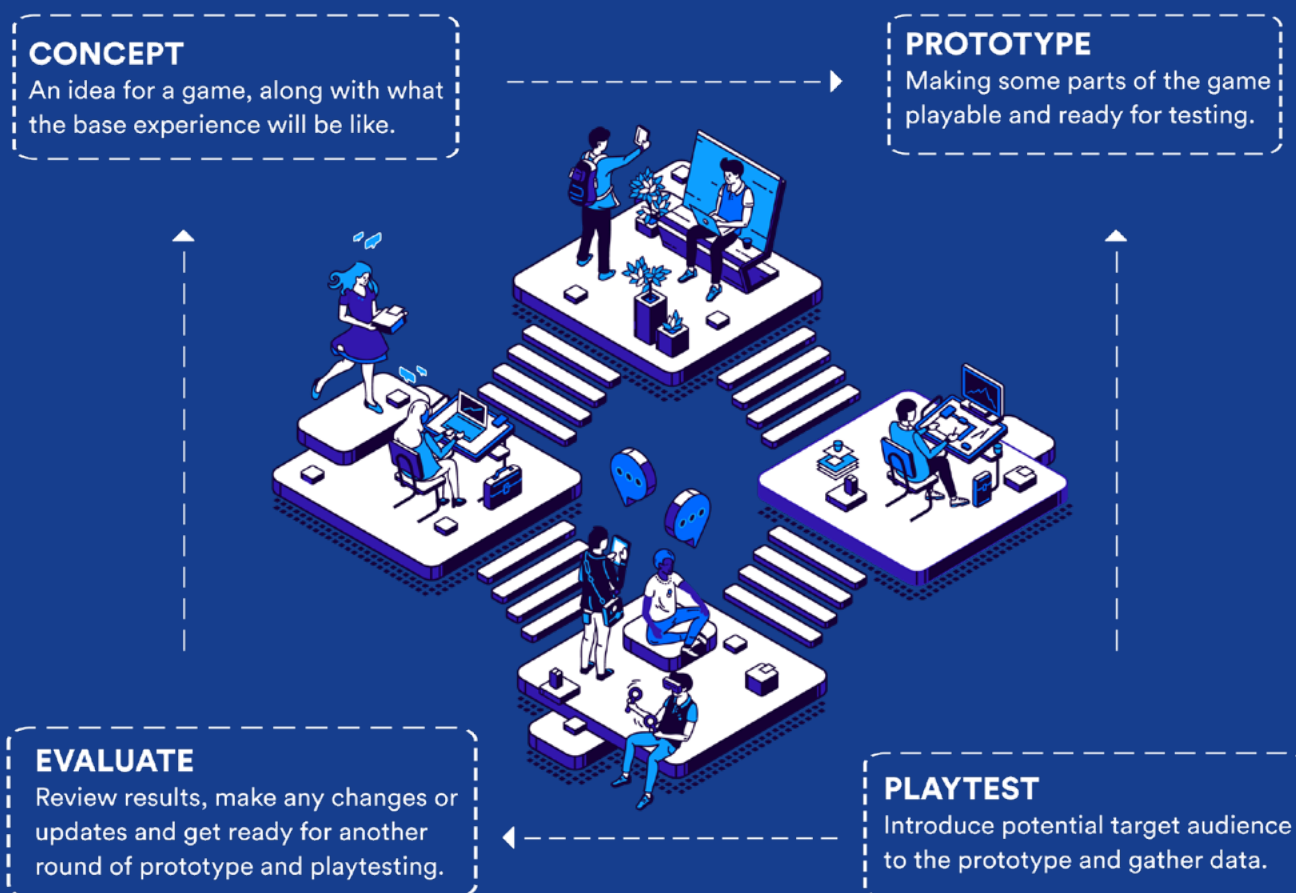
Next, we are going to look at how the game development process typically runs to equip you with the knowledge to know the critical steps and how you should approach your project. Let's begin with the formal stages of game development:



**The specific game development stages and timelines depend on the scope and requirements of the project.*

The Iterative Process

Although the previous diagram shows the stages of game development as linear and possibly rigid steps, in reality, the process is iterative with constant changes to the design to refine the player experience. This can be summarised in a cyclical or looped process of Concept, Prototyping, Playtesting and Evaluation, together known as the Iterative Process. The faster you can move through this cycle, the more opportunities you have to validate that what you have built is having the desired impact. The formal stages of game development are more focused on who you are testing the game with, as you move from internal testing to large-scale testing with your target audience.



Now that you can better visualise the process for game development, and have a basic understanding of the development timeline - it's time to dive deeper into each stage.

We'll go into more detail about what is involved in each of these steps, starting with concept and pre-production.

DESIGN: Concept & Pre-Production



Before establishing how much work is involved in building your game, you must first create a game concept.

The best way to approach creating a transformational game is by starting with an objective and defining the problem that you are trying to solve, not the game that you want to build. Once you've clearly defined the problem you aim to solve, then you can then look for a style of game that aligns with this objective, instead of the other way around.

For example, if you want to give students a better appreciation and base knowledge for a career in rocket science, then you'd probably want to create a game that has some form of rocket simulation. In this example, the main objective is to create a transformational game that will resonate with aspiring rocket scientists and provide them with practical knowledge and skills that will be useful in their education.



TIP!

Gameplay should be used to help solve the problem in a meaningful way and not just to make the project fun.

One of the most important questions you need to answer at this stage - Is my project going to be effective with the team and resources I have?

It's a good idea to look at other games or real-world experiences for inspiration in this phase, so research and brainstorming sessions are your best tools. There are so many game styles and genres out there which may be suitable for solving your problem, so spend the time to explore the possibilities.

Here are elements in the design phase that are critical to the success of any project:



Objective: Start by understanding the problem that you are looking to solve, then clearly articulate what you want to achieve with this project. Our tips for setting great objectives are laid out in the next chapter of this eBook.



Target Audience: Understanding exactly who you are making this game for is a critical step that can be undervalued. It is better to be specific rather than vague as testing with a small but targeted group will make design iteration easier. Selecting an audience that is too broad will lead to conflicting feedback and ultimately a disjointed end product.



What's the Concept?: There is no magic formula for coming up with a winning concept, but starting with the above two steps should help set you up for success. My recommendation would be to look at existing games or real-world experiences for inspiration. Real-world experiences such as growing crops, building infrastructure, or even rocket science can all be translated into a game format. If you can find a similar game or a style of game that supports your objective and appeals to your audience then you have a good foundation to build from.



Key Performance Indicators (KPIs): This step focuses on the real-world metrics that you want to impact. Being specific from the beginning will help shape the design and let you know when you have achieved your goals. Focusing on a small number (3 to 5) of targeted KPIs is a good way to start, such as “Raising x dollars for y charity” or “Have 30% of players finish the first 5 levels and complete the post-evaluation survey” ”.



Market Validation Plan: How do you plan on validating the actual need for your game in the market? Your project might be based on the best research and assumptions about the audience, but it is important to test those assumptions to ensure that your project will succeed long-term in the real-world.



Technical Requirements: From the start, you should identify technical requirements and conduct research on how they will impact your project. Does it need to be compatible

with various tools? Does it need to abide by specific security standards? Does it need to support 1 million players playing at the same time? These requirements will shape the overall design of your project, so ensure you identify them as early as possible.

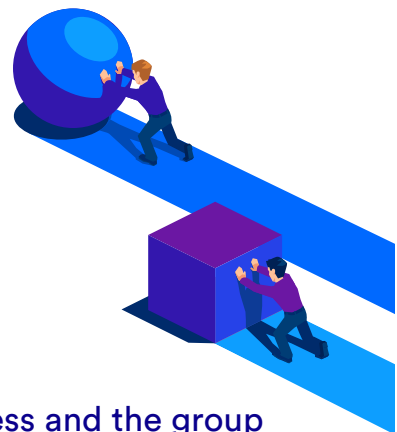


Maintenance and Support: Although not critical, you need to be aware of potential commitment post-release, such as maintenance to the game once it has been launched. The timeline post-release should ideally be accounted for during early planning to avoid any potential oversight.

DEVELOP: Alpha, Beta & Gold

Now that you've come up with an exciting concept and completed pre-production, it's time to move to the Development stage. This entire process is iterative. You should aim to test your ideas with the end-user as early as possible to ensure that it is both fun and effective. This may mean throwing out some earlier ideas or changing your design to account for new information. Although this may seem like wasted work, in the long run, this approach forces you to focus on creating a game that is the best fit for your target audience and sets you on the path to reach success.

Don't become too attached to designs from the early stages of the project, you might discover new and better versions later on! This is all part of iterative design.



Development is broken up into different milestones based on progress and the group of players you are testing your game with. Proof of Concept is when you are creating a prototype and don't yet have a playable version of the game. Alpha is when you have a version of the game that you can test internally, either with your team or small groups of testers from your target audience. Beta is when the game is being tested by users outside of a controlled testing environment and is typically a larger group than Alpha.

And finally, Gold is the version of the game that you release to the public as the first official launch.

During each of these stages, you will be adding features and content to the game to move towards a more complete experience. In general, it is best practice to work towards milestones, focusing on a small number of features that will deliver an impactful experience - rather than building all features at the same time. By focusing on smaller milestones you can work towards creating playable versions of the game to test with your target audience. This will show you if the individual features are working as expected, or if they require additional refinement before implementing the next batch. Milestones will validate the progress you are making and indicate if you are likely to meet your KPIs.

The “Project Scope” describes all of the features, functionality, and content that is going to be in the final game, while “Out of scope” consists of all the great ideas that you don’t have the resources to implement (yet). It is worth identifying and continually clarifying what is within the project scope and what is out of scope because there will always be more great ideas than time to implement.

You and your team must be open to following an iterative process and adapting the project scope to incorporate new ideas whilst dropping redundant ideas.

Here are tips for managing the scope of your project when working with an external developer:

- Understand that **25% of the game is not developed in 25% of the time.** Think of game development like building a skyscraper. There is a lot of work involved in the design and engineering of the building before starting. Before work begins you need to lay the foundations and only then can you start building levels.
- This skyscraper analogy also applies to changes in scope as the project progresses. **The further along in the building process you go, the harder it is to change the foundations.** If you want to change an early feature you may be required to undo a lot of work to make that one change.

- Be honest about what you like and dislike. It is easier to change things early. **Don't hold off on raising concerns until the end of the project** because it will be much more work to change the design later.
- **Ask someone with expertise about how much work is involved.** It isn't always obvious what is easy and what is hard to implement and you want to focus your effort on high-value changes. Understanding the rough time and resources required to implement feature A or feature B may change what you choose to prioritise.
- **Make sure that you are managing risk.** A lot of innovative mechanics and systems are great, but these will have unforeseen impacts on the scope. If you are working on an innovative project then have flexibility in the scope to account for new feature ideas or changes requests that come up in playtesting.
- Research what other games are already on the market. Look into how they approached similar problems and **you can potentially learn from their solutions and mistakes.**



DID YOU KNOW?

The term “gamification” was coined by Nick Pelling, a British-born computer programmer in 2002. Charles A Coonradt is widely recognised as the “Grandfather of Gamification” after his book *The Game of Work* released in 1984, which suggested combining fun and games may increase employee engagement and productivity.



MAINTENANCE & SUPPORT



You've finally finished production and launched your game! But the work might not stop here. New features, content updates, and fixes for common issues could be distributed to your players post-release.

Launching your game is a massive milestone and with that comes access to a wealth of data on player engagement and performance. Post-release development allows you to refine the game's efficacy to maximise impact.



TIP!

TEST EARLY! What needs to be changed sometimes isn't identified until someone has actually played through the game in a real-world environment. Not testing your game until it is "done" means you could be spending resources on features and functionality that players don't care about.

Depending on the type of game, you may also need to perform maintenance to keep the game working as intended. Even offline games may require minor updates to support new hardware and software standards, such as the latest iPhone.

This may be a comparatively small cost, but it should be accounted for if you want your game to have an impact for years to come.



The three most common forms of maintenance are corrective, adaptive and perfective:

- Corrective maintenance handles software or hardware updates and minor bugs. This generally happens immediately after release.
- Adaptive maintenance is when a developer has to update the game's software core to accommodate an overall system update. For example, if a new iPhone with unique dimensions is released, your game's software might need to be updated to meet new standards.
- Perfective maintenance is the constant updating of a game over time to improve the overall impact or player experience. For example, making slight adjustments to your game's tutorial or content.

In general, perfective maintenance will take up the majority of maintenance and support time (an average of 70% of your maintenance budget), followed by corrective maintenance. It is important to collaborate with developers who can work seamlessly to minimise interruptions to your users!



MARKETING & PROMOTION



While not required for actually creating the game, it is still a critical stage if you are looking to have a wide-scale impact; **Marketing and promoting your project is often forgotten. Don't do that!**

It is easy to think that people will care about your project because it is a fun and exciting game with a noble purpose. This isn't often the case as your target audience doesn't have any way to find out about your game in the first place. If you fail to communicate your game's purpose and connect with the right audience, you won't stand out and fall short of reaching your goal to create change, even if you build an amazing game.

Depending on your project scope, audience and purpose, marketing may require more or less of your time, but it should be considered and planned out.

Sending an email to your mailing list when the game is launched likely won't be enough. You should create a marketing plan that outlines how you intend on reaching and engaging with your potential players. Which marketing activities are you going to focus on? What deadlines will your marketing campaigns meet?

Start the planning early so that you can be promoting your game before it is launched. It is never too early to start - you should be thinking about how your game will reach its audience during the earliest design stages of your project. If ongoing engagement is required to meet your objective then make sure that you are engaging with your audience long after the game is released.



TIP!

A rule of thumb for the games industry is that **30%** of the overall time and budget should go towards marketing and promotion

Here are some marketing tools that would help you promote your game:

BRAND AMBASSADORS

Finding the right people to engage with your audience and promote the game.

RUNNING ADS

It's all about picking the right platform for your game.

CREATE SOCIAL SPACES

A place for your audience and players to connect and discuss the game, eg, Discord.

EXISTING CHANNELS

Utilise your businesses mailing list to promote the launch.

SOCIAL MEDIA CAMPAIGN

If you already have an audience, consistent posts to promote your game will go far.

PRESS INTERVIEWS

Low cost but challenging. The payoff is worth it to be newsworthy.

HIRE PR AGENCY

If your still unsure or nervous, hire an agency to take care of everything for you!

The common trend between all of these marketing activities is that you need to understand your audience, know where to connect with them, and speak in a way that appeals to their preferences.

Remember, just like game design and development, marketing may also require a specialised skill set to execute campaigns effectively.

CASE STUDY 2

SURVIVE THE CENTURY

Created by Sam Beckbessinger, Simon Nicholson
and Christopher Trisos.

Industry: Socio-environmental and Global Research

Application: Climate Change Education

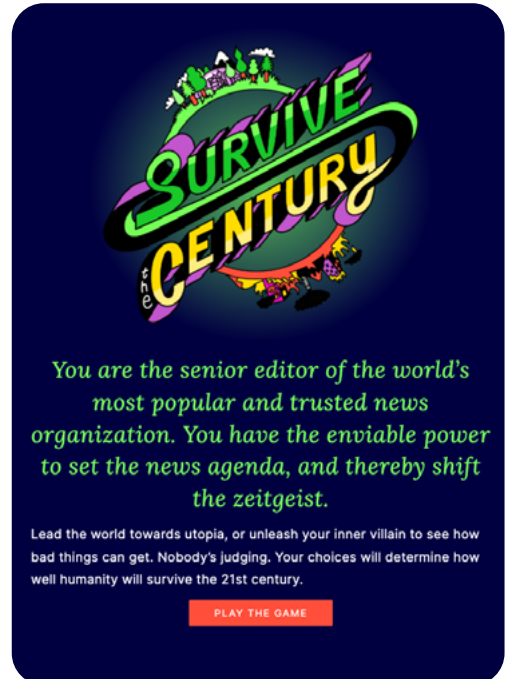
Platform: Website (PC, Windows or Mac)

Survive the Century is a choice-based game that tackles the topics of climate change and social change. It puts forward ideas and actions that the player can take to make an impact on this issue.

The game takes place from the year 2021 to the year 2100, in the form of news headlines and descriptions. The player is then given options on how to proceed, what decisions they may have

to make to help or hinder the global situation. While the game is a work of fiction, it is based and informed heavily by real science and research. Just as a transformational game should, it fosters a noble and compelling core message - humankind reaching long-term sustainability rather than seeking temporary pleasure or addictions.

The game was targeted toward nihilist Gen Z'ers who have climate anxiety linked to environmental disasters. At the end of the game, players are directed to a climate organisation near them. Many schools have approached the creators of the game to include it in their curriculum as well. This game exemplifies how researching and understanding your target audience and designing a game that appeals to them can drive action and impact.



Project Brief Example



If you are going to be working with an external developer on your transformational game then you are most likely going to need a **Project Brief**. Here are a few critical questions to answer if working with an external team:

- **BACKGROUND INFORMATION:** About your organisation and the context behind this project. Why have you decided that you want to build this game? Have you completed similar projects in the past?
- **PROJECT DESCRIPTION:** As much information about the project as possible. Do you know what game you want to build? Are there other components of this project external to the game?
- **PROJECT GOALS:** Knowing what you want to achieve will help the developer design a solution best for your project. Clearly defined goals will enable them to suggest a solution that you may not have considered previously. What does it mean if this game is successful?
- **TIMELINE AND KEY DATES:** This could be from a few months to a few years, but laying out key dates for when certain milestones have to be reached will help you manage the delivery of various milestones.
- **TARGET AUDIENCE:** It is important to know who this game is going to be played by. The more specific you can be with your target audience is in the beginning, the more focused your development and feedback cycles will be. You can always expand the target audience after finding success, but our recommendation is to start with a very specific group in mind.
- **TECHNICAL REQUIREMENTS:** Does the game need to integrate with any existing systems such as an internal account system or existing content management system? Does the game need to track specific information about the user? The technical requirements can be a significant hidden cost when not identified upfront.

- **CREATIVE REFERENCE:** Do you know what you want the game to look like or feel like? I would recommend looking at similar games that have been released on the same platform that you are targeting, as what is possible on desktop computers might not be possible on mobile. Keep in mind your own project budget and timeline, and try to identify creative references that may be similar. Unless you have the same budget as Fortnite, you may not be able to achieve something that looks and feels just as polished!
- **DELIVERABLES:** What specifically are you expecting to be delivered? Is it just a final version of the game, or do you also require documentation, maintenance, and access to the source code?
- **BUDGET:** Being upfront about the budget that you have to work with can help guide the discussion around what is achievable, or where a different approach may be more suitable. If you are unable to disclose the budget that you have to work with then I would highly recommend coming up with a list of what is essential to the project, and what is a 'nice to have'.



DID YOU KNOW?

Over 54% of new hires report being highly productive after undergoing a gamified training programme. Participants are also found to score **14 points higher** in skill assessment tests compared to others.



CASE STUDY 3

KANGAZOO

Created by the Australian Department of Foreign Affairs and Trade, PentaQuest and Chaos Theory Games

Industry: Environmental Educational Games

Application: Conservation Education

Platform: Mobile Game (Apple App Store and Google Play Store)

KangaZoo is a simulation game that promotes the conservation of indigenous flora and fauna. Players seek to rescue, rehabilitate and release animals to further their progress in the game. The Department of Foreign Affairs and Trade (DFAT) wanted to showcase Australia's unique biodiversity to young people from all over the world.



The game highlights real environmental and zoological-focused research from Australian universities. The game uses contextual surveys delivered by the in-game characters to measure a change in players, which showed that there was a 10% increase in the intent to visit Australia after 20 minutes of play.

DFAT wanted to attract a new generation of international scientists that can help build a better future for Australia. KangaZoo is the best example of how clear goals, original design, and iterative development can create a unique and effective transformational game.

4 Theories and Approaches FOR SUCCESS

We've covered which problems are best suited for transformational games to solve and the fundamental processes involved in game development, but how do you ensure that your project reaches its intended goals?

In this chapter, we are going to look at the three most important concepts to keep in mind when creating a transformational game - Objectives, Key Performance Indicators (KPIs), and Impact Measurement.

- Objectives ensure that you have a clear goal to work towards that your whole team understands.
- KPIs ensure that you know what success looks like - where to focus your efforts.
- Impact Measurement ensures that you are validating the success of your project.

Each of these components works together to ensure that you are maximising the impact of the time and resources that you are putting in.

OBJECTIVES

Having a clear objective for your project is the most critical step. This might sound obvious, but it's common for projects to have a vague purpose that can be interpreted by the various stakeholders in different ways. You can't tell whether your project is successful if you don't know what the goal is.

As an example, educational games can sometimes have an objective such as "teach students about how gravity works". This isn't a great objective because there is so much room for interpretation by different members of the team. A much better purpose

would be “Teach year 10 students the fundamentals of Newton’s Law of Universal Gravitation, and improve those students’ scores on the relevant physics exams by an average of 10%”.

So why is it important to clearly define your objectives?

There are three key reasons why establishing objectives before pre-production is important:

- 1. ALIGNMENT:** It helps to align the vision within the team and amongst your stakeholders over important design decisions. It is easier to veto ideas that aren’t in support of the goal if your objective is clear. A clear objective helps everyone on your team contribute effective ideas, not just ‘cool ideas’.
- 2. INSPIRATION:** Provides an insightful or meaningful outlook on why the work matters to help your team persevere during potential development struggles or setbacks.
- 3. DIRECTION:** While other parts of the project may change, the objectives act as a guiding light, moving the project towards the desired impact.

What are some tips for setting great objectives?

- 1. Be specific.** So that different members of the team don’t interpret it in their own way.
- 2. Be measurable.** Make sure that you can measure the impact that you want to have. This will be very important later in the process.
- 3. Identify your priorities.** What is most important? What is nice to have?
- 4. Focus on the impact** you want to have. Don’t focus on the game you want to build.
- 5. Involve the whole team.** Or at least make sure that all key decision-makers are involved.
- 6. Make it memorable.** You want the whole team to remember what your objectives are and use them regularly in discussions.
- 7. Your objectives and goals are for your team.** External messaging about the project can be refined at a later stage, so don’t worry if they are a bit clunky.

KEY PERFORMANCE INDICATORS

Beyond the change that you are looking to have within your players, there will always be other outcomes that your team is looking to get out of the project. Some common secondary goals for transformational games are:

1. **To make a financial return on the original investment**
2. **To gain recognition from peers or the wider community**
3. **To make your mark on a topic through a work of creative expression**



When compared to impacting your players and changing the world, which of these goals are most important? It is common to want all of these outcomes, but understanding the order of importance is critical. **The design choices for having maximum impact on changing players will often compete with making money or creative expression.** A free game will reach more people, after all, but a free game might not give you the funds to work on your next project.

To align all of your stakeholders towards the project objectives, you can employ the use of Key Performance Indicators to quantify what success looks like. **There are a lot of ways to set KPIs, but the goal is to have your team agree on all of them and then actively work towards achieving them.**

A helpful tool to setting good KPIs or goals is by using the SMART framework. You can read up in more detail about the uses of SMART goals [here](#). In the simplest form, your goals should be:

- Specific
- Measurable
- Achievable
- Relevant
- Time-bound

The next section deals with how to measure these metrics to improve your performance.

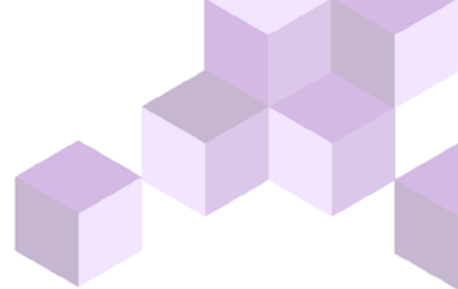


TIP!

Distribution platforms such as the App Store often provide you with game performance indicators such as downloads, retention, and monetization. To track more specific KPIs you may need to use tools such as Firebase and Google Analytics which allow you to create custom reports.



IMPACT MEASUREMENT



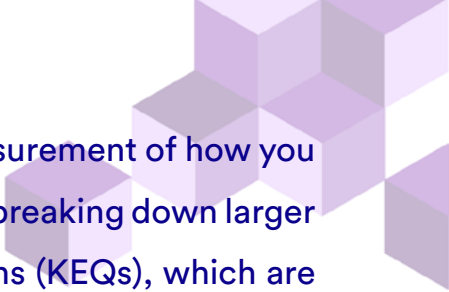
Impact measurement is critical to understanding if the effort that you put in was worth it. The sooner you can validate what is and isn't working, the sooner you know where your effort needs to be focused to maximise impact and minimise waste.

If you are not measuring impact then you are shooting in the dark and won't be able to tell if the changes that you are making are moving towards or away from your objective. Ultimately, the end result of impact measurement is being able to tell the story of how your game succeeded or failed. **Your impact measurement will be unique to the type of game you've made**, the audience you cater to, and what your goals were in the beginning. Some games have an immediate cause-effect outcome, while others may take longer to prove that the appropriate outcome was reached.

If your ultimate objective is easy to measure, such as memorising X new concepts or increasing exercise by Y% minutes per day, then your impact measurement plan will be simple - just measure the final outcome. If your objective is more nebulous and difficult to directly observe, such as avoiding global temperature increases of Z% using a game, then you will likely need to use an impact measurement framework.

There are several frameworks out there that you could tailor to your project, but I suggest using the **Theory of Change** framework. This is a good all-round tool for both immediate and long-term effect measurement.





The Theory of Change (or ‘logic model’) is a useful graphical measurement of how you would arrive at your intended outcome through core activities by breaking down larger problems. This breakdown is defined by Key Evaluation Questions (KEQs), which are formulated to query whether or not your game is appropriate for the target audience, how effective it is in creating change, whether it has the potential to be expanded on or added to, or whether your game is achieving its Objectives and meeting its Key Performance Indicators.

Whilst the specifics of the model would change based on what you are applying it to, the basics of the model can be broken down into four components:

1. **ACTIVITIES:** “What activities are people doing to achieve the objective?”
 - This includes developing the game, releasing it, players downloading it, logging in, or engaging with specific systems.
2. **OUTPUTS:** “What are the results from the development team and the players completing activities?” - Did the player complete all the levels in the game? Did they sign a pledge to exercise at least 3 times a week? These metrics are also directly measurable, indicate the game is being effective, and give us information about where to focus on improving the game through additional development.
3. **OUTCOMES:** “Are the outputs leading to the intended change within the people completing the activities (in our case, this is usually the players)” - This step is focused on validating if the Outputs have changed a player’s perceptions and behaviours. This is another key step in the measurement process and might require follow up interviews or direct observation of players to get a sample of how the outputs are translating into outcomes. Did signing that pledge actually result in the player exercising 3 times a week? What was the weekly retention rate for those who started exercising and eventually stopped?

4. VISION: “Did the changes that we achieved and the scale of the changes meet our original objective?” - The final step on measuring impact is looking at all the activities, outputs, and outcomes that were achieved to calculate if your original objective was reached. If this can be achieved through direct measurement then that is great, but for harder-to-measure objectives, you may need to infer the impact of your game. If you can broadly quantify the problem you are looking to solve and show that playing the game will result in approximately X outcomes per player (while knowing the impact of your outcomes), then you can calculate the final impact of your project!

Another useful tool that complements the Theory of Change framework is the Social Return on Investment (SROI). The [SROI questionnaire](#) by The Social Value UK is designed to evaluate the impact measurement process of a business and whether or not it has achieved societal change. This framework can also be useful when applied to games. The tool is used to gauge social value, rather than monetary value.



IMPACT MEASUREMENT SUMMARY

Regardless of how you approach impact measurement, it is important to start the process early. By identifying how you will measure the efficacy of your project, you can ensure that features and functionality will support the type of data you are looking to collect. Also, the earlier you can run these tests, the more time you will have to change your approach and focus on the activities that are working, or ignore the ones that aren't working.

Finally, remember that there often isn't a perfect answer to social change impact measurement. There may be uncertainties along the way. **If your objectives and KPIs are aligned with the impact that you want to have, and you are measuring the impact your game has, you will have a great chance at success!**



DID YOU KNOW?

At Fortune 500 firms, **73.6 percent of technology-delivered training** comes through networked, online methods. Like Walmart that introduced an app that contained bite-sized videos and courses for how to operate machinery safely.

CASE STUDY 4

THE QUADCADE

Created by the MICA Game Lab, the Maryland Blended Reality Center and the University of Maryland Medical Center's Shock Trauma Unit

Industry: Medical Research

Application: Post-Trauma Therapy & Surgery

Platform: VR with Quadstick

Dr. Sarah Murthi of the Maryland Shock Trauma Centre and Maryland Blended Reality Centre reached out with an idea that would potentially change the way paraplegics and shock trauma patients recover and go through physical therapy. Together with MICA GameLab's Director Jason Corace, Dr. Murthu released Quadcade.



Quadcade takes players through basic physical activities such as farming, running or archery, and it's all controlled through an orally-activated joystick "Quadstick". This is due to the nature of paraplegia of the recovering patients and the reintroduction of basic breathing exercises. Its main purpose aside from adding a bit of fun to recovery, is to test and monitor the patient's ability to breathe off their ventilators.

Quadcade is a good example of how Objectives, KPIs, and Impact Measurement help focus a project towards maximum impact. Its objective was to make the journey of coming off the ventilator for paraplegic patients to be less anxiety ridden and to make time in the ICU better. They tested a suite of games which used the Quadstick in different ways until they were confident that the project was meeting their goals. Knowing that the game or experience you have created is making a real difference in the world is an incredible feeling!

5 CONCLUSION

This eBook covered the information required to understand the process of creating a game with real-world impact. We hope that the practical advice we have offered will help you come to the right decisions to make your project a reality. But there's still plenty to know and learn!

While it may seem like a daunting task for some, the potential impact that we can have on the world is unmatched. Digital games can tackle a diverse range of challenges and have the potential to make a genuine difference, when following the right processes and collaborating with a diverse team of experts.

There are plenty more learning resources out there that can help you on your journey, some of which have been linked in this book. If you want to stay up to date on the latest developments in the transformational games industry, you can subscribe to our newsletter or [follow us on social media](#).

We hope this guide has given you the confidence to start working on a transformational game, or even just armed you with the knowledge required to make an informed decision about the best solution to future problems.

SO, ARE YOU READY TO TAKE ON THE NEXT PART OF THIS JOURNEY?

Free 30-minute Brainstorm Session!

Do you need a development team to bring your transformational game idea to life? Do you have questions about transformational games and want to ask the team behind this book? We can help!

[Claim your FREE session now](#)



MEET THE AUTHOR



Nico King is the Executive Creative Director at Chaos Theory and has been designing and building games since the age of 12. He is a prominent member of the transformational games development community and a staunch believer in the power of games to fundamentally change people's lives for the better.

Chaos Theory Games is a game development studio based in Sydney, Australia. **We create games that improve quality of life and inspire a more sustainable future through the magic of play.**

THANK YOU FOR READING OUR E-BOOK

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