



**BSc Hons Computer Game
Design and Development**

**GDV4000 Introduction to
Games Industry Practice**

Game Development Process – The Game Design
Document



Topics we'll be looking at



A Brief Recap



Organisation of the Development Team

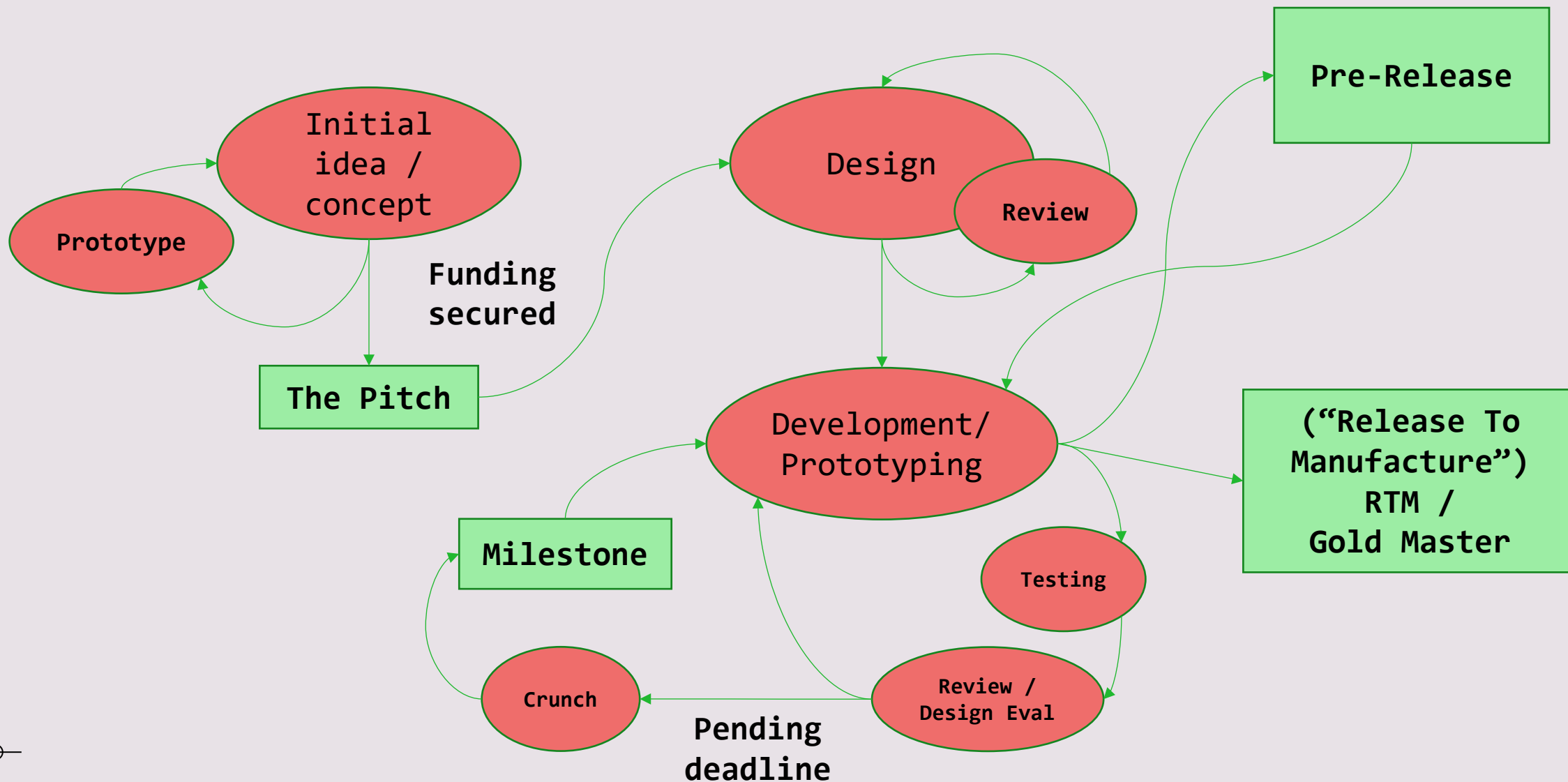


Creating a Game Design Document



Recap

- Overview of the Development Process...



Recap

- Overview of the Game Concept

The concept stage outlines the following aspects of the game (and forms the basis of the Pitch document).

- **Introduction**

- + Sell the game – keep it to a short and succinct statement that sums up your game, including the genre.

- **Background**

- + Expand on any previous IP if available – can help to sell the game idea.

- **Gameplay Narrative**

- + Describe how the player plays through the game – emphasise key actions and challenges.

- **Key Features / pillars of the game**

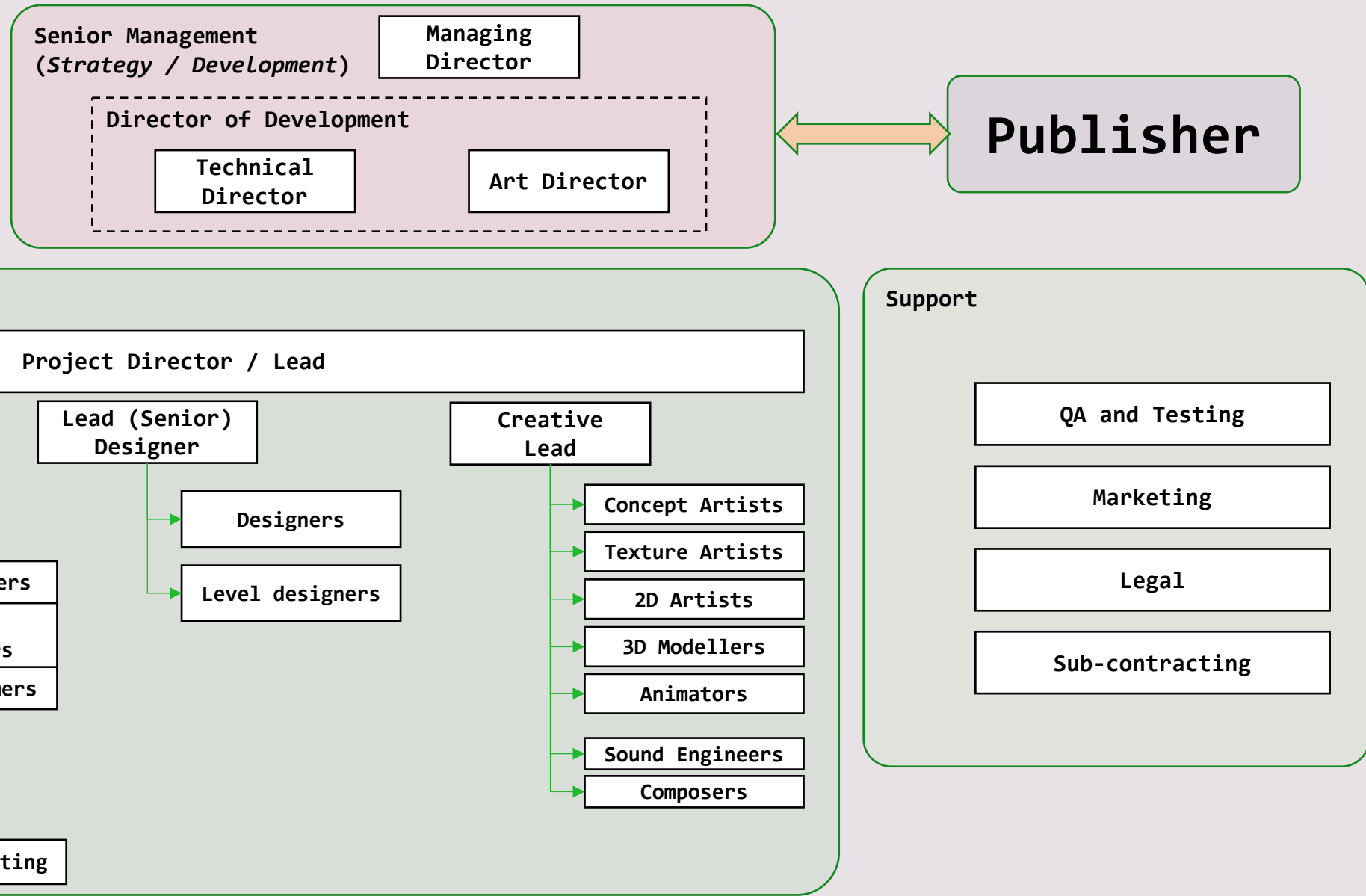
- + What makes the game special? What experience do you want your players to have? What is the ‘*soul*’ of the game? This can also form part of your Unique Selling Points.

- **Target Platforms**

- + The intended platforms you want to implement the game on.



Organisation of the Development Team



YOUR
LOGO
HERE

Game Design Game Document

YOUR GAME STUDIO NAME
Written by YOUR NAME HERE
All work Copyright ©2017
www.yourwebsite.com
MONTH DAY, YEAR

VIDEO GAME TITLE HERE

Google: GDD & TDD

6

- ▶ Google: Game Design Document Example
 - ▶ You'll get MANY MANY examples
- ▶ In general each one has a particular bias to a particular type of game or a particular teams approach to development
- ▶ Probably not a good idea to follow any such list slavishly
 - ▶ EVEN MINE
- ▶ Add, remove, combine, takeaway as your project requires

Game Design Document & Technical Design Document

- ▶ Your GDD describes “What the game is” – breaking down your ideas as described in the elevator pitch and your game concept.
- ▶ A Technical Design Document (TDD) describes “How the game is accomplished” – What tools will be used, how programming turns the game into reality
- ▶ Your ‘Game Bible’ which details **everything** about the game
- ▶ They are ‘live’ documents -You will have to update both of them over the development of the game
- ▶ GDD should be understandable to anyone reading it, especially new people on your team (Designer; Artist; Programmer, etc). TDD should be understandable to people with a technical background (Programmer; Engineer)

They are **'live'** Documents

You **will** have to update both of them over time!
Also DON'T wipe yourself out trying to implement something that is
no longer required!

Change the GDD!

Creating a Game Design Document

- We can look at our design documentation as having three main aims:
 1. Designers express their vision of the game
 2. Producers express a plan for how the game will be implemented
 3. **The design serves as a document from which the artists and programmers can create the final product.**

This final point is very important. A good design document should be communicating everything that the development team needs to perform their role (what they need to do!). It should also give each team/individual a good understanding of how their contribution fits into the bigger picture.



Creating a Game Design Document

- What is in a Design Document?

The design documentation of a game spans everything from the concept to the production planning. The main documents are:

1. Initial Concept/ Proposal (internal)
2. The Pitch Document
3. Game Design (What is in the game – written from the perspective of the **player**)
4. Technical Specification (**how** things are implemented – system view)
5. Production Documentation (project planning/ schedules)

In each case, it is important to follow guidelines, as design documents can vary in length and clarity, depending on the developer and the game.

Guidelines help to ensure consistency and make the documentation easier to follow, with less uncertainty during implementation.



Creating a Game Design Document

- The Game Design Document

The purpose of the game design document is to set out exactly **what** is in the game. This can also be referred to as the *functional design*.

It is written from the **player's** perspective, in the context of the game's environment.

It is **not** a pitch document. Its job is not to *sell* the game, but to elaborate on each aspect of the game, demonstrating how the intended game will fulfil the original vision/ game pillars.

The Game Design can consist of the following sections:

- **Story (if relevant)**
- **Game Mechanics**
- **Internal Economy**
- **User Interface**
- **Art + Video**
- **Sound + Music**
- **Level Requirements**



Creating the Game Design Document

- **Story**

This section is an opportunity to expand on the game's narrative and background lore. It may not be appropriate or relevant for every game (Space Invaders), but an open world adventure, or an RPG game will typically have some kind of backstory. There will be a synopsis of the game world, the characters and where the game story fits in. The following sub-sections can be included (depending on the type of game):

- **Back Story** – The world, history, cultures, and key protagonists/ antagonists.
- **The plot played out by the game and where this fits into the world/ back story.**
- **Descriptions of key locations** (*reference point for subsequent level design*)
- **Descriptions of the characters in the world** (*reference point for subsequent character art/ design*). This can include the history of cultures, clans etc.
- **Outline of dialogue, text and cut-scene requirements** to help guide the development of the schedule. Cut scenes for key points in the story should be highlighted. Also, the types of interaction and dialogue the characters will exhibit can be identified. A trader will interact differently to a warrior or a wizard. Doing this helps to create a clearer picture for subsequent development. Note: This should also include “background” dialogue.



Creating a Game Design Document

- **Gameplay**

Game mechanics refer to the actions/ mechanisms that drive the game forward. Prior to describing the mechanics of the game, you should provide a brief synopsis of two important aspects (which underpin the core pillars of the game, established at the concept stage, and are in turn underpinned by the game mechanics and other design elements). These are:

- Gameplay
- Flow



Creating a Game Design Document

- **Gameplay**

Gameplay refers to the interaction between the **player** and the **game**. This is an **emergent** property, supported by the **core** game mechanics (explored later in the design). In this section you can document:

- The type(s) of gameplay your game will be based on (broad categories)
 - + **Linear** – Complete tasks in a set order as you progress through the game world, completing set goals.
 - + **Non-Linear** – Complete tasks in different orders to achieve a goal (open world games).
 - + **Multiplayer Symmetric** – Multiple players, each with similar gameplay.
 - + **Multiplayer Asymmetric** – Multiple players but with sub-sets having different gameplay.
 - + **Multiplayer Cooperative** – Multiple players that work together.
- Provide a synopsis describing how the players interact with the game, and how the feedback from the game to the player works, how it responds to the player. This section dives deeper into the core pillars established at the concept stage, but now you are linking them, at a high level, to the mechanics that will eventually drive it.
 - + Example – You are implementing cooperative play, so you need to describe how each team member's skills are asymmetrical, providing different roles, and how each role is **challenged** and **rewarded**.



Creating a Game Design Document

- **Flow**

Closely tied to the mechanics in the concept of flow. Flow reflects the state of immersion/ focus the player experiences in the game. This is not just related to the mechanics, but is influenced by every aspect of the design.

In this section, describe what you want to achieve in terms of immersion. Outline key points/ guidelines that will underpin and maintain your intended flow within the game. How you do this can be expanded and elaborated upon in each subsequent section of the design, referencing back to your original intent.

How will you put the player “in the zone”?



Creating a Game Design Document

- Flow

Some background – From the field of psychology there are 9 key principles that underpin flow (the term flow was coined by Mihaly Csikszentmihalyi)...

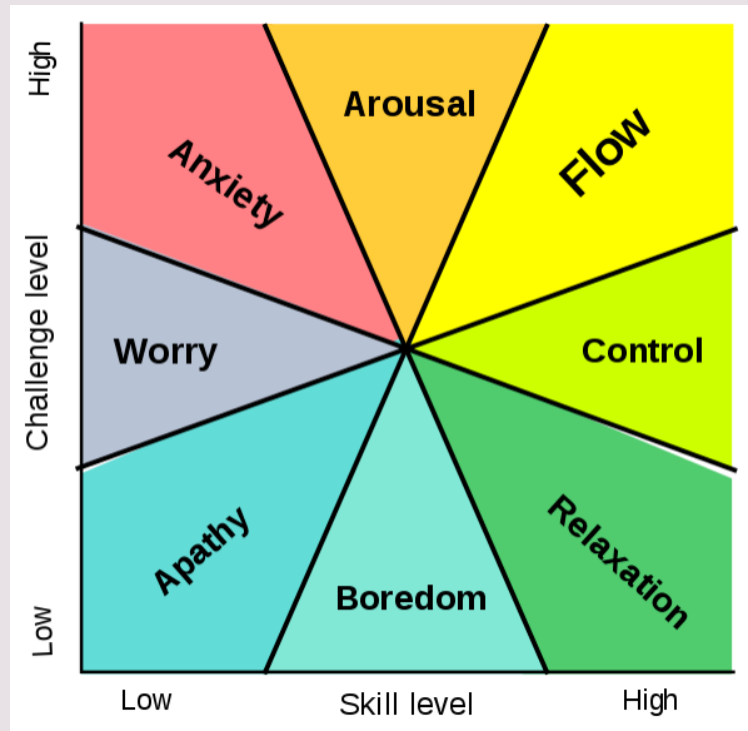
1. Intense and focused concentration on the present moment
2. Merging of action and awareness
3. A loss of reflective self-consciousness
4. A sense of personal control or agency over the situation or activity
5. A distortion of temporal experience, one's subjective experience of time is altered
6. Experience of the activity as intrinsically rewarding, also referred to as autotelic experience
7. Immediate feedback
8. Feeling that you have the potential to succeed
9. Feeling so engrossed in the experience, that other needs become negligible



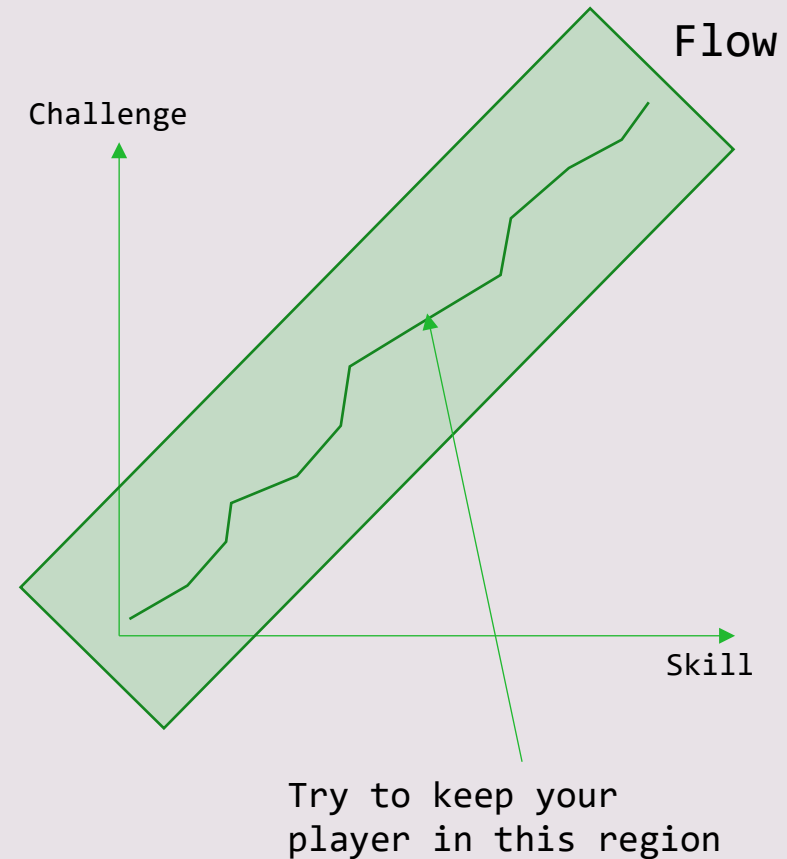
Creating a Game Design Document

- Flow

+ Where flow sits in relation of skill/ challenge...



from Csikszentmihalyi's flow model



Creating a Game Design Document

- Game Mechanics

- + Mechanics vs. Rules

- Games have rules:

*‘A game is a type of play activity, conducted in the context of a pretended reality, in which the participants try to achieve at least one arbitrary, nontrivial goal **by acting in accordance with rules.**’*

Fundamentals of Games Design: Ernest Adams.

*‘A game is a system in which players engage in artificial conflict, **defined by rules**, that results in a quantifiable outcome.’*

Rules of Play: Katie Salen Tekinbras and Eric Zimmerman.

*‘To play a game is to attempt to achieve a specific state of affairs, using only means permitted by rules, **where the rules prohibit use of more efficient in favour of less efficient means**, and where the rules are accepted just because they make possible such activity.’*

The Grasshopper: Bernard Suits (Suits was writing in 1978 and does not consider video games, or table-top role-playing games).

- + Consider the game of golf...

- The objective of the game is to get the ball in the hole in as few moves as possible. The most efficient means of doing this would be to pick up the ball and drop it in the hole. The rules create a situation where this is not permitted and adds a complication that a golf club must be used.



Creating a Game Design Document

- Game Mechanics

- + Mechanics vs. Rules

- Games have rules:

*‘A game is a type of play activity, conducted in the context of a pretended reality, in which the participants try to achieve at least one arbitrary, nontrivial goal **by acting in accordance with rules.**’*

Fundamentals of Games Design: Ernest Adams.

*‘A game is a system in which players engage in artificial conflict, **defined by rules**, that results in a quantifiable outcome.’*

Rules of Play: Katie Salen Tekinbras and Eric Zimmerman.

*‘To play a game is to attempt to achieve a specific state of affairs, using only means permitted by rules, **where the rules prohibit use of more efficient in favour of less efficient means**, and where the rules are accepted just because they make possible such activity.’*

The Grasshopper: Bernard Suits (Suits was writing in 1978 and does not consider video games, or table-top role-playing games).

- + Consider the game of golf...

- The objective of the game is to get the ball in the hole in as few moves as possible. The most efficient means of doing this would be to pick up the ball and drop it in the hole. The rules create a situation where this is not permitted and adds a complication that a golf club must be used.



Creating a Game Design Document

PRIMARY AND SECONDARY CORE MECHANICS

Definition refined by [Sicart\(2008\)](#)

Primary

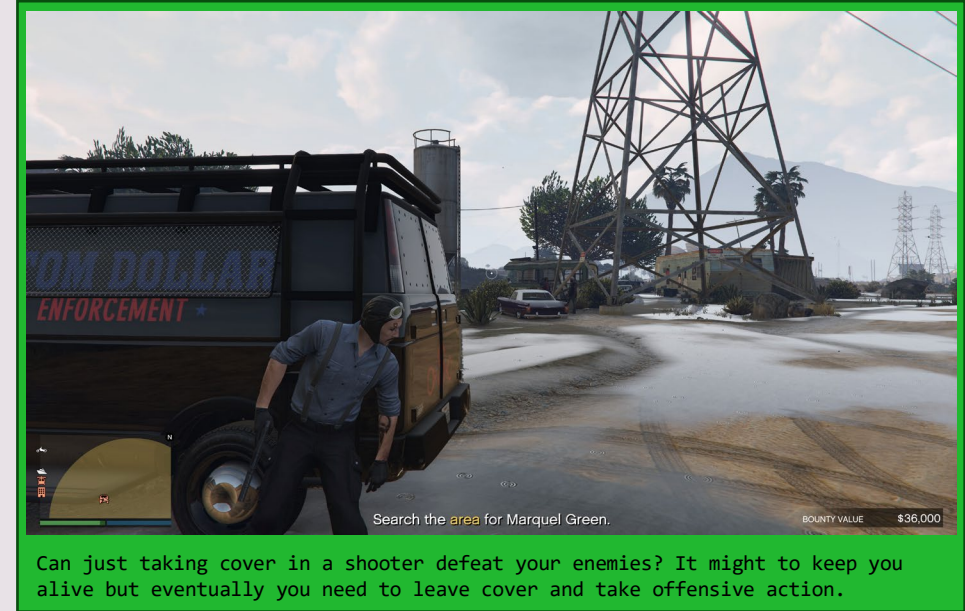
Directly applied to solving challenges

Secondary

Ease the players interaction with the game.

Available occasionally or used in combination with other mechanics.

Cannot be used alone to solve challenges.



Core

"... the essential play activity players perform again and again in a game (...) however, in many games, the core mechanic is a compound activity composed of a suite of actions" ([Salen Tekinbas and Zimmerman, 2004, p. 316](#)).

"... the possible or preferred or encouraged means with which the player can interact with game elements " (Järvinen 2008, p. 255)

- Games are classified into genres based on their gameplay.
- Gameplay is generated by game mechanics.



Creating a Game Design Document

- **Internal Economy**

- + Many games have a form of 'Internal Economy'. The depth and complexity of these economies can depend on the game genre. RPGs and strategy games will have different complex economies (trading, crafting, mining, construction, XP...) that interact with each other, FPS and platform games may have more straightforward economies (Ammo, Health, Coins...).
- + When talking about your Internal Economies, expressing them in a table as a list of items with their value/ worth in the game economy and how they impact the player (positive/ negative).

Item Name	Item Type	Damage	Weight	Buy (Gold)	Sell (Gold)	Player Effect
Frostblade	Weapon	25	10	2000	1500	+15% Frost Damage +10% Frost Resistance -5% Fire Resistance

This example not only contains an example of the kind of 'colour' that we would expect in the GDD (lore, such as the in-world name of the weapon, it's value and effects), but also information that would be featured in the TDD (values such as the weight, damage, the weapon type...) and would be needed by the developers programming the game.



Creating a Game Design Document

Types of Game Mechanic

According to Adams & Dormans (2012) there are 5 types:

- **1. Physics**

- + Generally, how things move/interact.
 - Hyperreal fluid simulations, cartoon physics, legal card placement in Solitaire.
 - Timing/Rhythm
 - The pace at which things change within the game, e.g., waves of NPCs etc,

- **2. Internal Economy**

- Transactions within the game, items collected, consumed, traded etc.
 - Sometimes resources (money, ammunition...)
 - Abstractions (health, popularity, ability, skill, points/levels...)

- **3. Progression Mechanism**

- Often dictated by levels
 - Fight to end of level, defeat boss.
 - Find keycard, open door.
 - Tiers of races / heats / predrawn pools.

- **4. Tactical Manoeuvring**

- Placement of units / selection of weapons etc (Rampart, StarCraft, Chess, Civilisation)

- **5. Social Interaction**

- More recent, originally limited to:
 - Prohibiting collusion (Don't give away your next move).
 - Hiding information (covering your cards, Battleships etc.)



Game genres and mechanics

- This table is adapted from Adams & Dormans (2012 p.8).
- Line thickness denotes importance.
- In the time since the authors created the table, elements such as Social Interaction have evolved.
- Use this as a guide – The concepts we are discussing are not set in stone!
- When discussing your Core (Primary/Secondary) and Non-Core mechanics, you should be able to explain, in the context of your game, why they are classified that way.

	Physics	Economy	Progression	Tactical Maneuvering	Social Interaction
Action	Detailed physics for movement, shooting, jumping, etc.	Power-ups, collectables, points and lives	Predesigned levels with increasingly difficult tasks, storyline to set player goals		
Strategy	Simple physics for movement and fighting	Unit building, resource harvesting, unit upgrading, risking units in combat	Scenarios to provide new sets of challenges	Positioning of units to gain offensive or defensive advantages	Coordinated actions, alliances and competition between players
Role-Playing	Relatively simple physics to resolve movement and conflict, often turn-based	Equipment and experience to customize a character or party	Story line and quests to give player a purpose and goal	Party tactics	Play-acting
Sports	Detailed simulation	Team management	Seasons, competitions, tournaments	Team tactics	
Vehicle Simulation	Detailed simulation	Vehicle tuning between missions	Missions, races, challenges, competitions, tournaments		
Management Simulation		Managing of resources, economy building	Scenarios to provide new sets of challenges	Managing of resources, economy building	Coordinated actions, alliances and competition between players
Adventure		Managing a player's inventory	Story to drive game, locks and key to control player progress		
Puzzle	Simple, often non-realistic and discrete, physics generate challenges		Short levels providing increasingly more difficult challenges		
Social Games		Resource harvesting and unit building, resources spend on personalized content	Quests and challenges to give player a purpose and a goal		Players exchange in-game resources, mechanics encourage player cooperation or conflict



Creating a Game Design Document

- User Interface

- + Describe/ illustrate all aspects of the game's interface that the player interacts with.

- What are the functional requirements of each screen and menu? Why do they exist and what do they do? Identify the essential elements that are shown to the player and the non-essential that can be configured or hidden.
- Flowcharts (storyboards) showing how the different screens and menus are connected together and how the player navigates them.
- Give a detailed description of all GUI/ HUD elements the player will interact with – Buttons/ navigation elements, textual elements (menu options), graphical elements and UI-based sound effects/ music. Type (font) design requirements can also be included here.

These are described separately from the UI functional requirements as there is a higher chance that they will change. When describing GUI elements, feel free to provide illustrations and mock-ups that could be a *guideline* to the artists, but give them room to adapt and change the design.



Creating a Game Design Document



Concept art for Thief 4 by Mathieu Latour-Duhaime. The game has a dark and foreboding palette, punctuated by points of light.

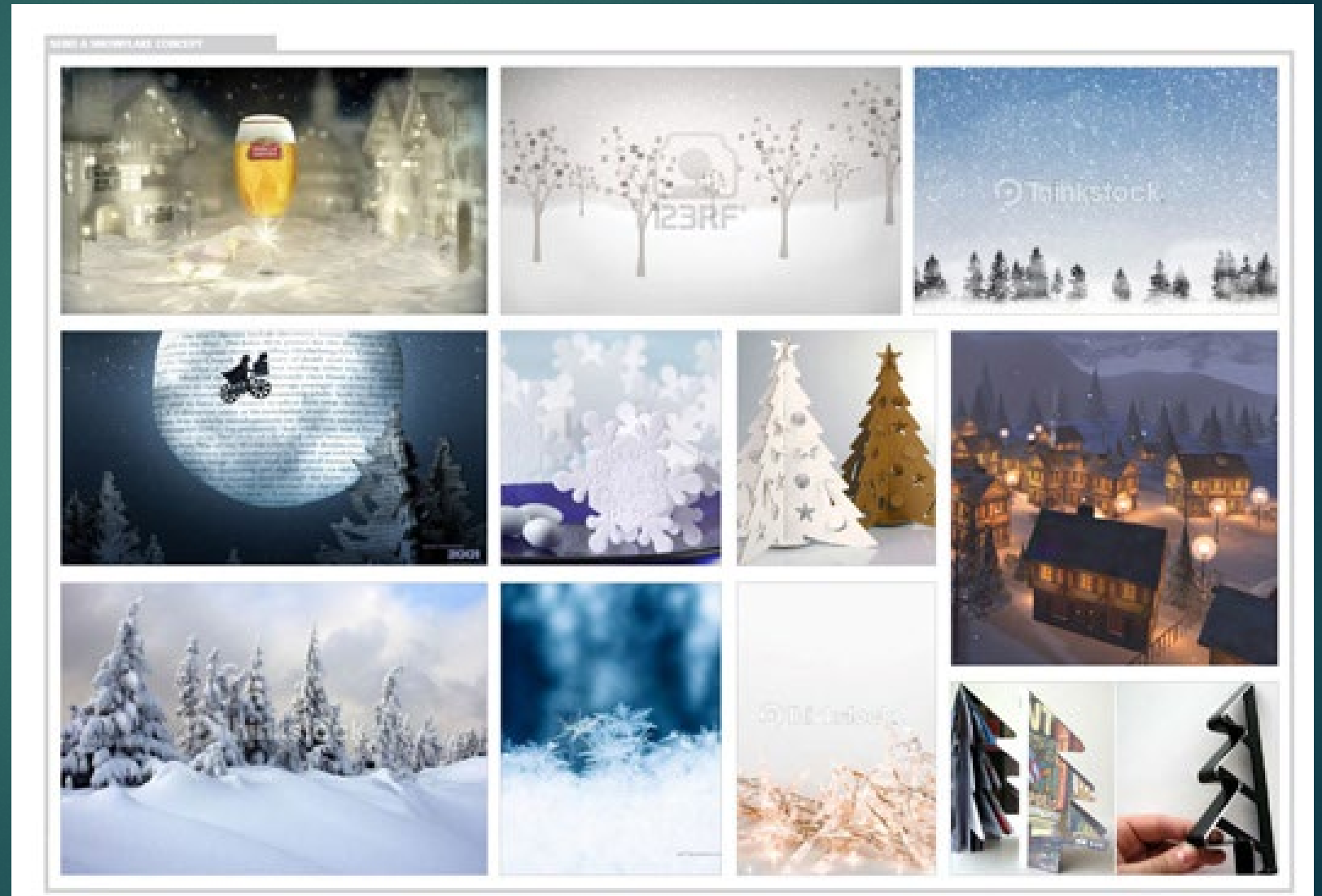
- Art and Video Style
 - + Define the palette for your game. Concept art can be a useful springboard here, lending to the feel and tone of the game. Agreement between the Lead Artist, Designer and Producer is important.



Mood Board

26

- Any images used will need to be referenced



Mono-chrome

- ▶ Black and white gradient tones with highlights from strong primary colours.
- ▶ It can be used to great effect if key parts of the game are shaded with bright colours as contrast.
- ▶ Sets the mood/atmosphere for the game world.



How to use visual styles effectively

28

- ▶ The visual style should compliment the theme of game.
- ▶ To make best use of colours in any game it is important to keep specific colours for specific tasks.



More General 'Themes'

- ▶ A particular art style
- ▶ A material
- ▶ Traditional Game Themes





Water Theme



Fire Theme



Let's try and be Just a little More Imaginative!

This might also link up to your procedural generation.
Produce the same world but with a different visual theme!

Creating a Game Design Document

- **Art and Video Style**

- + List all art assets needed in the game. This can include...

- Character Design (including costumes and animations)
 - Game Object art: Pick-ups, switches, weapons... Describe how they animate.
 - Environment art: Tiles, scenery elements, terrain, sky, background art.
 - Special effects: Explosions, lighting effects, environmental effects (fog, rain, tire tracks, bullet marks, debris)
 - GUI art: Splash screens and type design
 - Design and storyboarding of any cut-scenes and cinematics – video assets needed throughout the game.
 - Promotional art: Online assets, logos...

- + It is important to ensure that everyone on your team knows who is responsible for what, so this can provide a useful reference for the team.



Audio – Uses and theme

- ▶ Things to think about:
 - ▶ The game needs both background music and sound effects to be implemented.
 - ▶ These should fit with the theme of the game.
 - ▶ Sound effects should provide feedback to the player.
 - ▶ You are assessed on how effectively you use them, **NOT** their quality.
- ▶ In the GDD:
 - ▶ Overall theme and style of the audio
 - ▶ When & How will sound be used?
 - ▶ How will it convey the information the play requires?
 - ▶ Audio equivalent of a Mood Board
 - ▶ Mix tape?



Creating a Game Design Document

- **Audio**

- + List all audio assets used in the game. This can include...

- Character effects: Voice recordings for important NPCs, background voices, effects and general ambience. Character interaction with the environment – walking, running, landing, picking up and dropping objects)
 - Environmental effects: Wind, rain, running water, foliage and trees, falling rocks. Be clear in your design what is a constant sound, what is triggered randomly, and what is triggered by actions.
 - + Note: Games like *Phasmophobia* by Kinetic Games have particularly good sound design. Larger maps will have odd creaks and bangs that add to the atmosphere of being inside a large abandoned building but are very different from the sounds that will be created by the ghost. The player is not likely to confuse them.
 - Special effects: Weapons being fired, swords clashing, spells being cast...
 - GUI sound effects – It is important to relay to the player that the option they have selected has been actioned.



Creating a Game Design Document



Block-out of Seattle from The Last of Us Part 2 - Naughty Dog

- Level Design

The Level Design section can include:

- + A map, diagram, or flowchart outlining how the levels are connected, and what conditions need to be in place for the player to progress to the next level. Is the player locked off completely? Do success and failure result in different paths? A table can be drawn up outlining progress and initial level conditions.
- + Initial level design concepts. Does not need to be a fully designed level and will likely evolve through implementation and play-testing. This section can include guidelines for level creation – features that fit the lore of the game, specific design requirements around puzzles and set-piece challenges.



Creating a Game Design Document

- Level Design
 - + A **Beat Chart** can be a useful tool for keeping track of what is needed when (and where) in your game. Also, what the player is doing and where new items or abilities may be unlocked.
 - + This can also be expressed as a Gantt chart, to track where in the level events occur.
 - + **Level Dynamics** Identify where elements of the level change and describe how it links to progression, if relevant – Moving platforms, destructible scenery. Also, correlation to your asset list – If the player needs to blow a hole in a wall, do they have the dynamite at that point? If not, can they still progress?

Game Element	Helgen			
Location	Courtyard	Tower	Inn/Courtyard	Keep
Gameplay	Running	Running, jumping	Running	Running, fighting, blocking, looting
Objective	Escape Alduin	Escape Alduin	Escape Alduin	Escape Helgen
Story beat	Alduin attacks Helgen	Make way to Keep	Make way to Keep	Explore Keep
New weapon	None (Hands Bound)	None (Hands Bound)	None (Hands Bound)	Iron War Axe, Imperial Sword, Iron Dagger
Enemies	Alduin	Alduin	None	Imperials
Mechanics	Fire	Fire, falling rubble	Chasm	Attacking NPCs
NPC	Hadvar, Ralof	Hadvar, Ralof	Hadvar, Ralof	Ralof, Imperials

An Example Beat Chart of the opening ‘Helgen’ Tutorial from Elder Scrolls V: Skyrim



Creating a Game Design Document

- Some general thoughts and guidelines:

- + The design must clearly identify what the core features of the game must be in order to satisfy the core pillars of the underlying concept.
- + You can use MoSCoW as a guide to help prioritise features: Must have, Should have, Could have, Won't have. It helps to cement your concept and avoid 'Feature Creep'.
- + Avoid duplication, vagueness and ambiguity. As you work on the live documentation, you will be populating both the GDD and the TDD. Use the structure templates provided to help you choose what needs to go where. For example, a GDD might have:
 - 'The boss character for Level 1 has three principle attributes: energy, shield strength, and firepower'.

Whereas your TDD might have:

- 'The boss character from Level 1 is an instance of the Boss class, which inherits from the NPC class and has the following additional attributes: float energy; float shieldStrength; float firePower;'.
- + Take your time creating the document – The length of the document is not necessarily proportional to the time taken to create the design. Ensure you have time to reflect and make changes where necessary.
- + The GDD does not refer to the real-world actions performed by the player, but the in-game actions performed by the player-character via the player.
 - 'At the very edge of the ledge, the player jumps to get across the chasm.'

Not, 'At the very edge of the ledge, the player presses the jump key or "A" on the controller to get across the chasm.'



Creating a Game Design Document

- Some general thoughts and guidelines:

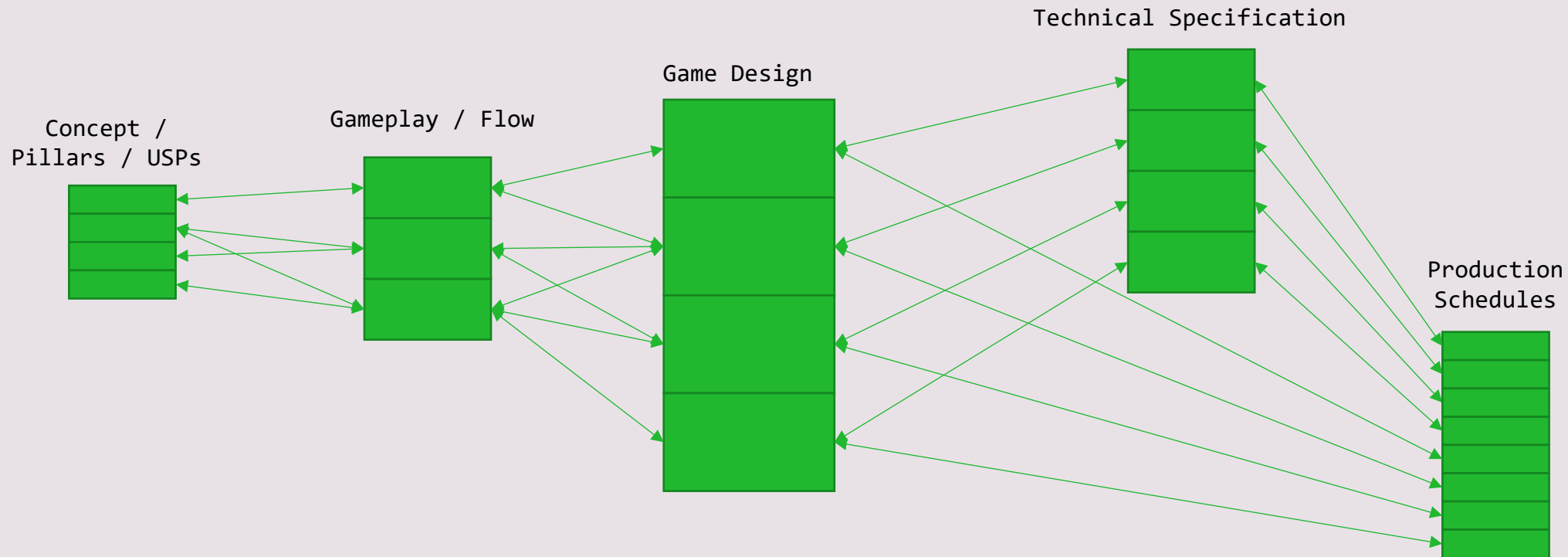
- + If your Design document follows a clear structure, you can then use those details as a springboard for the Technical documentation, and the dev team can easily see what needs to be done...
 - Details about characters, in-game elements and behaviours can then map to the implementation/ coding details as well as data structures used in the TDD.
 - Character designs and abilities can serve as a guide for the artists and animators.
 - Maps and level design provide a basis for level creation and scripting.
 - Sound effects musical requirements serve as a guide for the composers/ sound engineers.
 - In-game features, flow/ progression, also provide a framework for QA and testing.
- + **Hint:** Once you know what your Core Mechanics are, make a plan to prioritise and test them. How will you know they work the way you want/need them to?



Creating a Game Design Document

- Some general thoughts and guidelines:

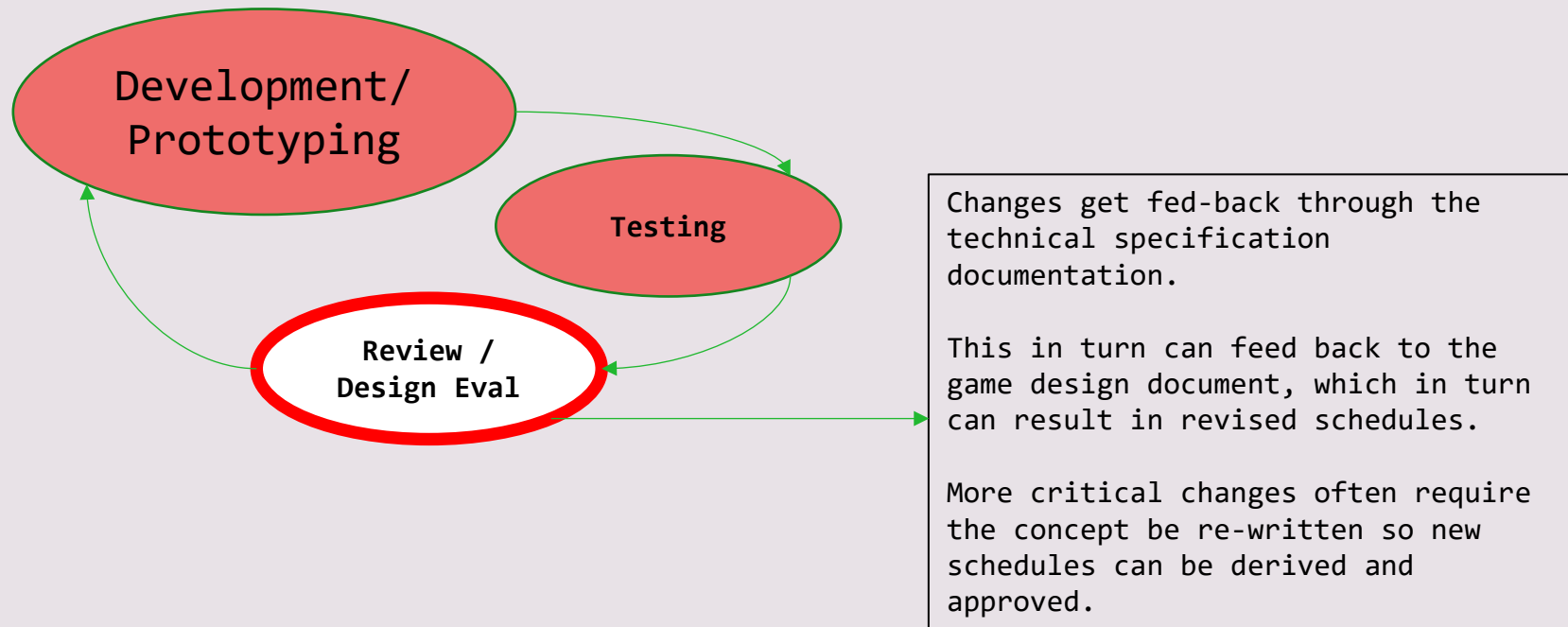
- + It can facilitate the game development process if the stages of the design document are 'concept aligned'. This means that the concept documentation (Pitch/ 1-Page, 10-Page) spells out the core pillars of the game. These pillars then map to the GDD as outlined above. In turn the GDD maps to the TDD and the production/ schedule documentation. All elements can be seen to map to those core pillars of the game. Producing a map of how your documentation aligns can be helpful to eliminate duplication and avoid ambiguity.



Creating a Game Design Document

- Some general thoughts and guidelines:

- + Leave room to manoeuvre. The design is open to, and liable to, change through regular team meetings.
- + It may change during development.
- + **All changes must be reflected through the documentation!** Communication within the team is crucial here. When you meet, take notes. Appoint someone to take minutes of the meeting to keep track of what was discussed and who was present.



References / Resources

- Developing a Game Design Document

https://www.gamasutra.com/view/feature/131632/creating_a_great_design_document.php

- The anatomy of a game design document – Part 1

https://www.gamasutra.com/view/feature/131791/the_anatomy_of_a_design_document.php

- The anatomy of a game design document – Part 2

https://www.gamasutra.com/view/feature/131818/the_anatomy_of_a_design_document.php

- From Games to Change (Psychological viewpoint of Serious Games)

<https://www.slideshare.net/MavisDixon/from-games-to-change-full-indie-presentation-aug-9-2014>

- The Psychology of Flow (also see [Mihaly Csikszentmihalyi](#))

[https://en.m.wikipedia.org/wiki/Flow_\(psychology\)](https://en.m.wikipedia.org/wiki/Flow_(psychology))



Cardiff
Metropolitan
University

Prifysgol
Metropolitan
Caerdydd