01 Game Design Basics

Tvorba a dizajn počítačových hier (FMFI)

Návrh a vývoj počítačových hier (FIIT)

Michal Ferko

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What is Game Design?

Game Design

- Determines what will be and **what won’t be** in the game
- Dictates the overall player experience
- Ensures engagement for the player
- Always works with difficult constraints

A Game Designer

- Communicates the vision of the project to the whole team
- Explains every single detail and gets everyone on the same page
- Creates game mechanics (systems) that form the game
- Creates the story, setting, narrative…
- Ensures balance

A Game Designer is the player’s advocate

Player-centric approach

- What can I give the player?
- What does the player want?
  - What type of players are they?
- How will this affect the player?
- Will this have the effect on the player that I want?
- What **value** do I give the player?

Create experiences, not mechanics

- What do we want the player to experience?
- How do we want them to experience it?
- Every decision should work toward improving the experience

Player Motivation

- People play because of different reasons
- You should think about what motivates the player
  - To start playing
  - To keep playing
  - To return the next day
- **It changes over time and as you play**

- **Exercise:** Pick a game you played recently
  - Why did you start playing?
  - When you decided to play again, what was your motivation?
  - Why did you stop playing?

by Quantic Foundry

GAMER MOTIVATION MODEL






Action "Boom!"	Social "Let's Play Together"	Mastery "Let Me Think"	Achievement "I Want More"	Immersion "Once Upon a Time"	Creativity "What If?"
Destruction Guns. Explosives. Chaos. Mayhem.	**Competition** Duels. Matches. High on Ranking.	**Challenge** Practice. High Difficulty. Challenges.	**Completion** Get All Collectibles. Complete All Missions.	**Fantasy** Being someone else, somewhere else.	**Design** Expression. Customization.
Excitement Fast-Paced. Action. Surprises. Thrills.	**Community** Being on Team. Chatting. Interacting.	**Strategy** Thinking Ahead. Making Decisions.	**Power** Powerful Character. Powerful Equipment.	**Story** Elaborate plots. Interesting characters.	**Discovery** Explore. Tinker. Experiment.

Why?

Not just hearing

Listening!

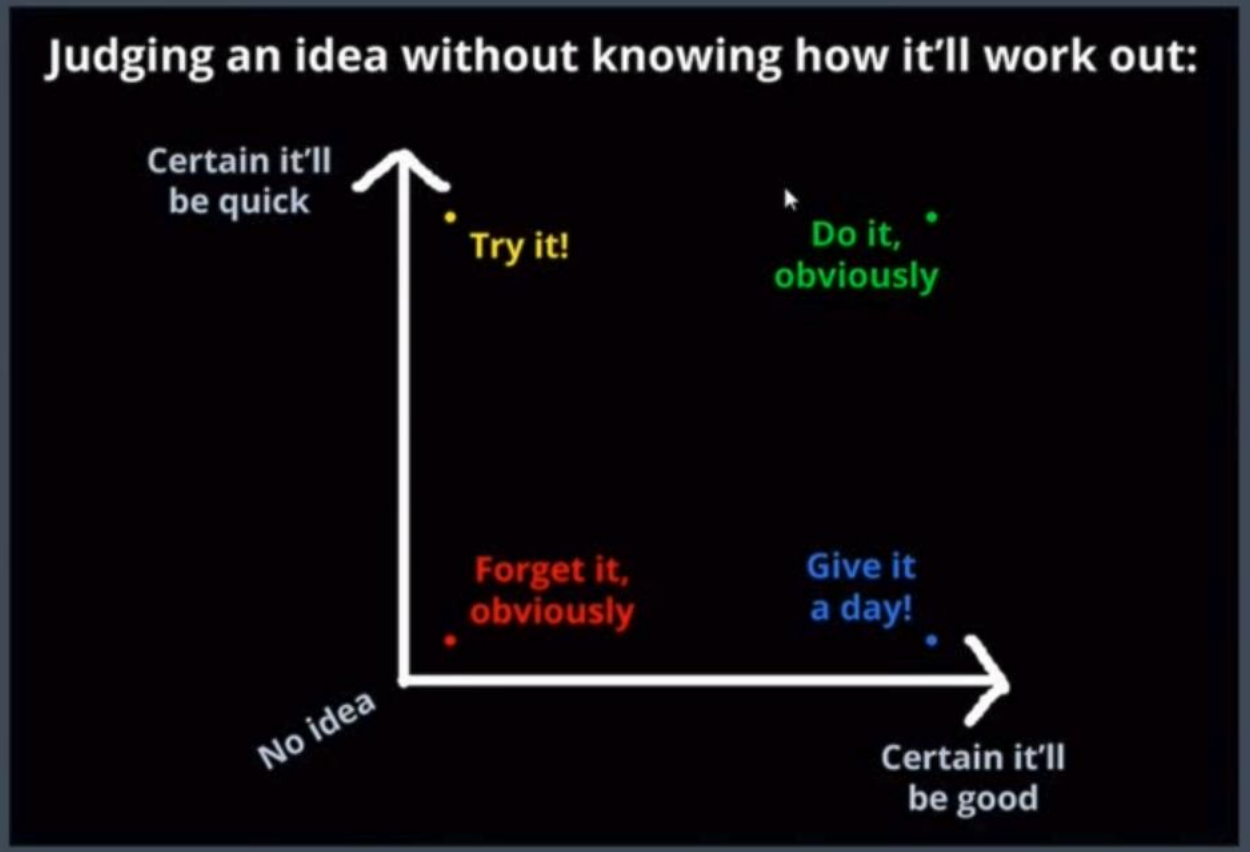
Deliberate Game Design

- Everything must have a purpose
- How it is fulfilled changes with every change to the game
- Existing purposes need to be re-evaluated
- Remember purposes
- *If you can't convince the team **why** it should be in the game, it should NOT be in the game*

"But I want it there"

  - OK for gamedev as a hobby and not part of a team
  - Will most likely clash with what some players want

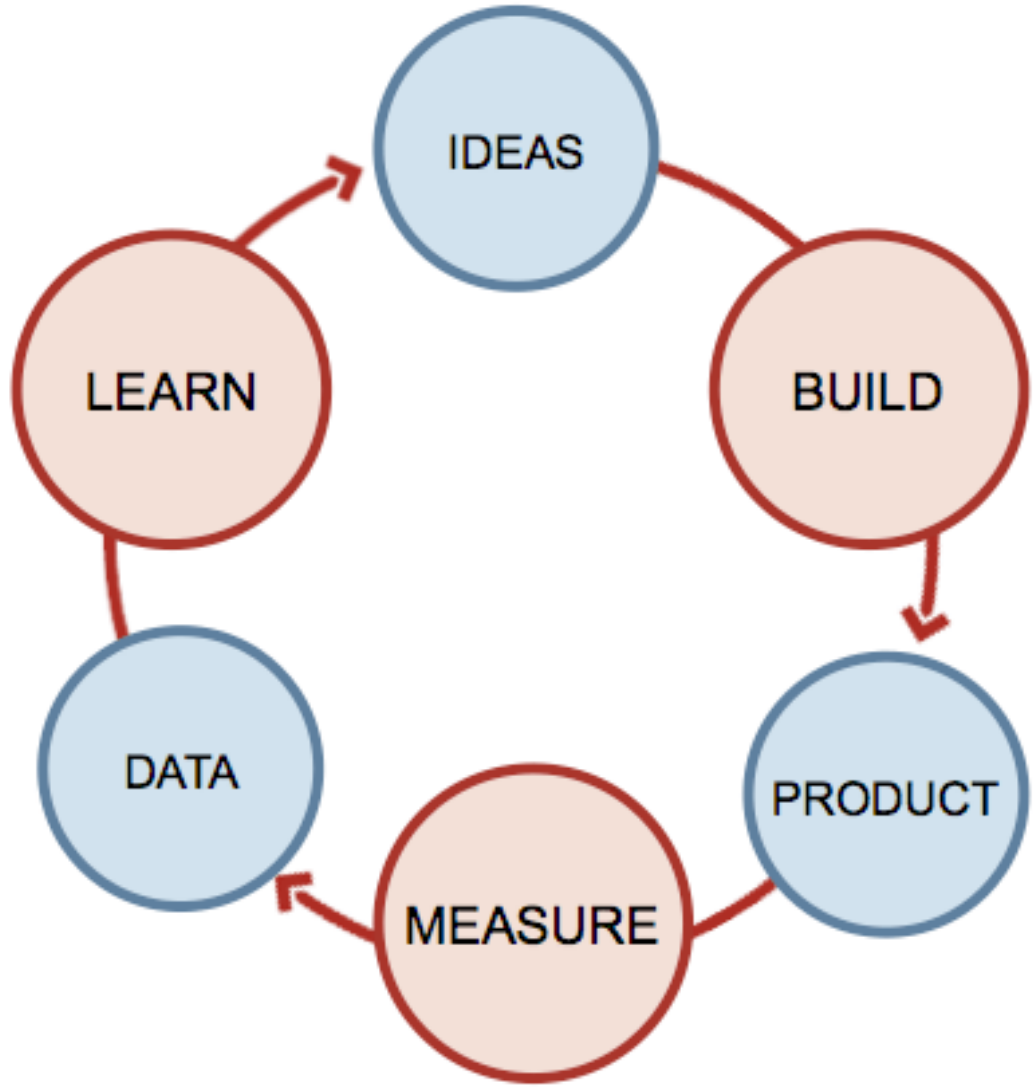
Judging an idea without knowing how it'll work out:



Game Design is Communication

- With the player
  - Always think how you will present something to the player, how it will be understood
  - Practice introspection – observing yourself while playing games
- With the team
  - Keep a Game Design Document (GDD) - provides clarity, reminds of purpose
  - Get on the same page
  - Two teams with the same GDD should end up with 2 very similar games
- With the customer
  - Think how you will market the game
- With the game itself
- *A game is defined more by what you **don't** put in than by what you put in*

Game Design is iterative


IDEAS
BUILD
PRODUCT
MEASURE
DATA
LEARN

Always playtest

- Any meaningful gameplay/change you do, you should see how someone plays it
- You are an expert in your game, you know everything
- The player usually has no idea
- Playtests are the **only way** to validate if players understand and can play your game
- The more iterations you manage to do (Build-Measure-Learn), the better your game will be

Minimalism

- Every idea creates a ton of work for everyone on the team
- The designer is responsible for keeping it as minimal as possible
- Simpler features ⇒ faster iteration time ⇒ better game & happier team

- You must understand the ramifications of your decisions
  - Technical difficulty, art difficulty
  - Production speed, deadlines, business goals

If you mess up scope and are not willing to cut, you have already failed

Kill Ideas Quickly

Every Game Developer
is a Game Designer

You will copy a lot!

- A ton of research was done into how good games are designed
- If you're doing something completely new
  - It's not tested
  - You don't know exactly what effect it will have
  - You need to test it
  - Testing takes time
- Even if you think it's new, someone might have tried it before
  - But you don't know it
  - And they know why they did not use it
- ***Innovate more in fewer places***

Steal Like an Artist

It’s Analysis & Research

- You need to analyze & research other games as well

- What makes them work?
- What are the problems in a game’s design?
- What is the purpose of individual mechanics?
- How will you replicate a game’s experience?
  - How will you replicate a non-game experience?

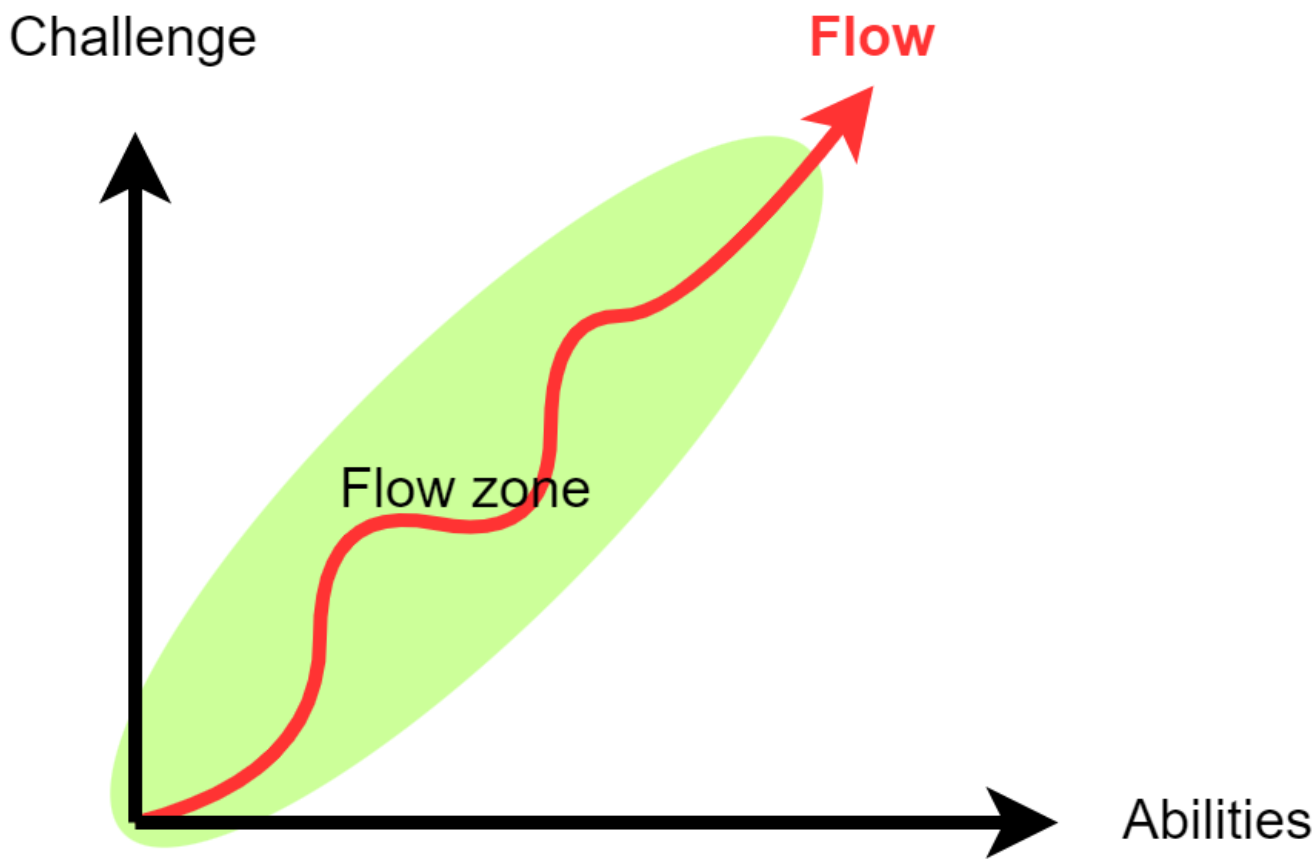
- **Introspection** – observe yourself as you play

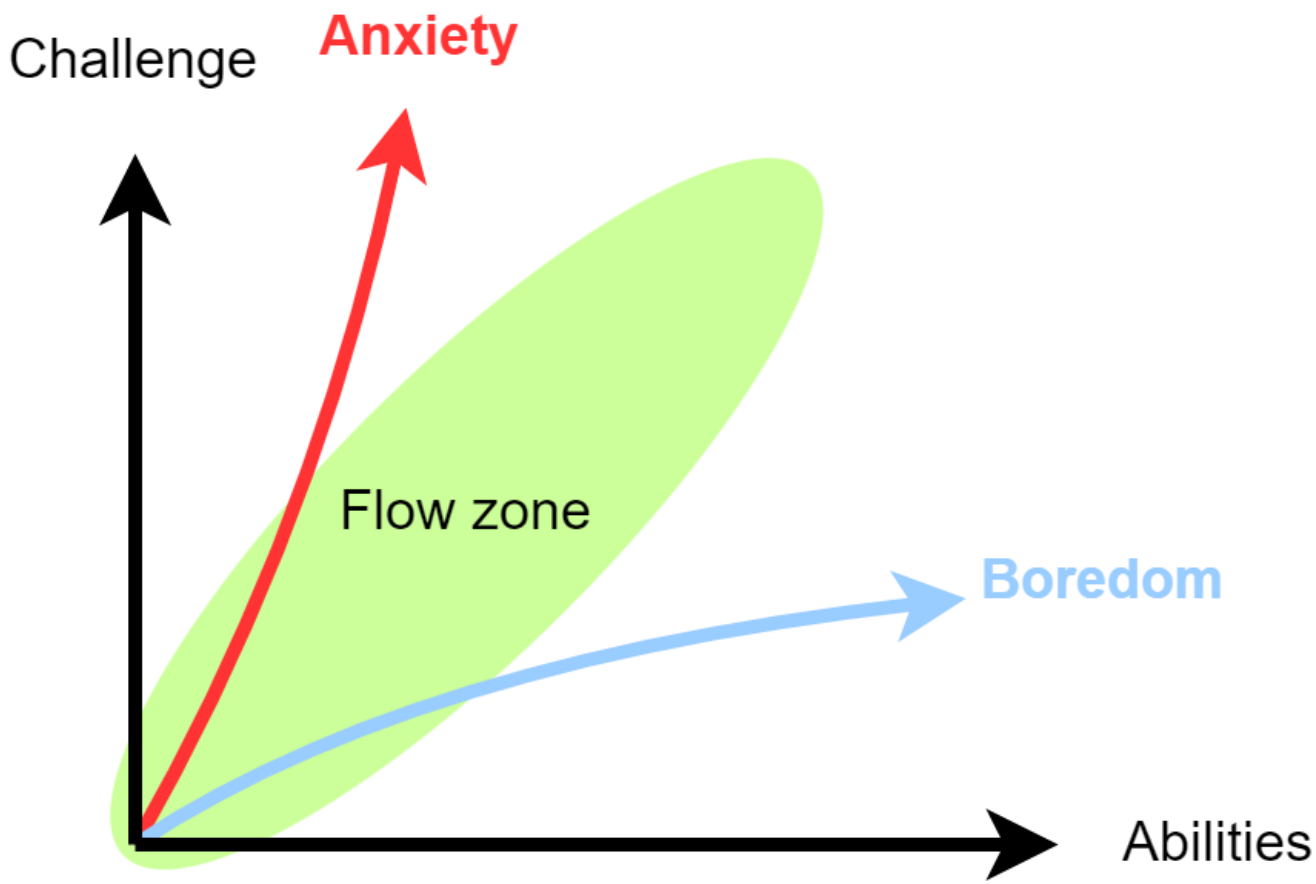
Players should get into flow

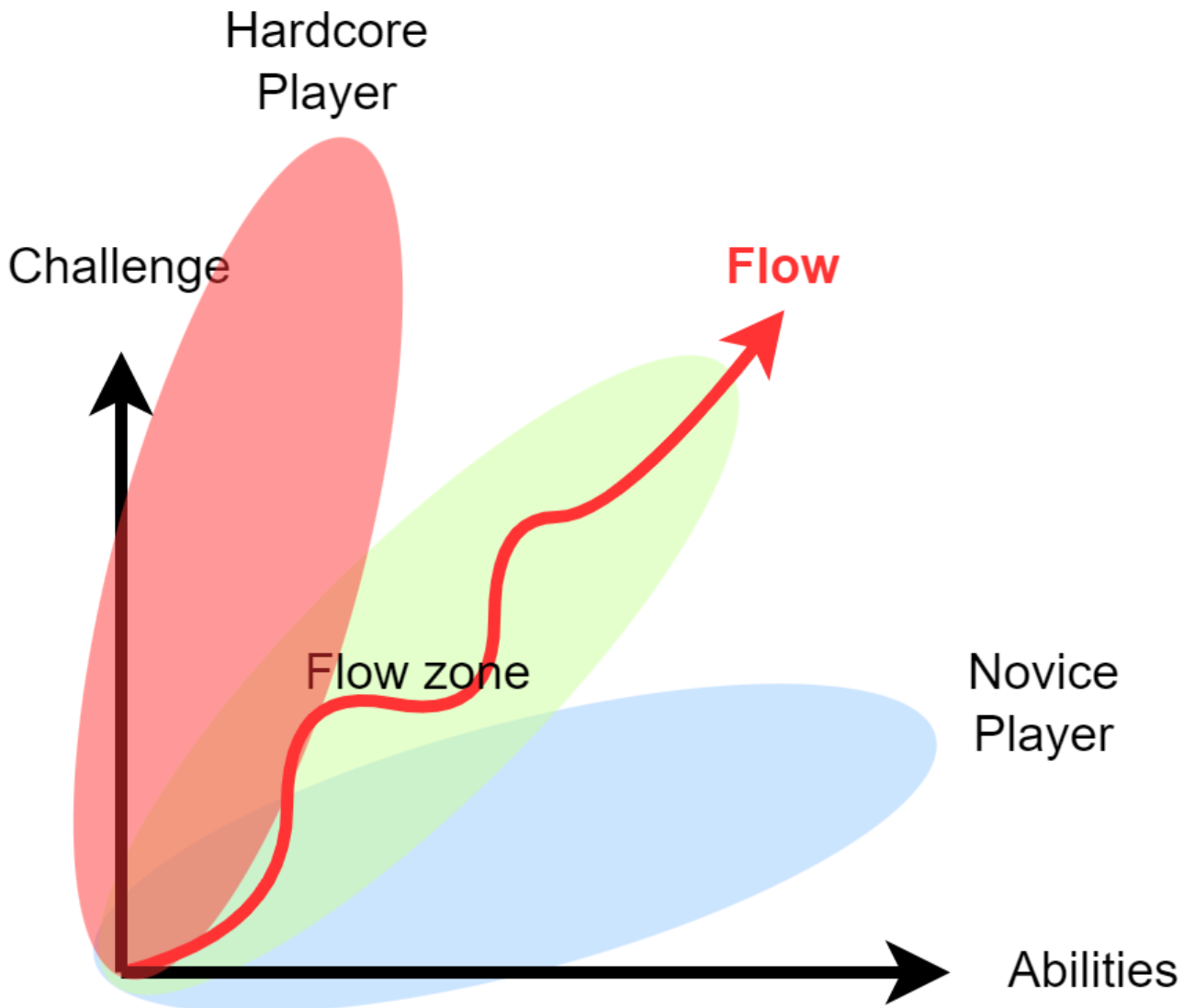
- **Flow** also known as **being “in the zone”**
  - Fully immersed in a feeling of energized focus, full involvement, and enjoyment int the process of the activity
  - Experience of time is altered, other needs become negligible…
- Flow happens when you perform activities you are skilled in
  - But face some form of challenges
- Not specific to games, happens with sports, work, driving, hobbies…

https://www.jenovachen.com/flowingames/Flow_in_games_final.pdf

https://www.amazon.com/Flow-Psychology-Experience-Perennial-Classics/dp/0061339202


Challenge
Flow
Flow zone
Abilities


Challenge
Anxiety
Flow zone
Boredom
Abilities


Hardcore
Player
Challenge
Flow
Flow zone
Novice
Player
Abilities

Flow Attributes

- Flow can happen only if the activity has the following
  - Clear Goals
    - you are trying to achieve something, and you know what it is
  - Balance between Challenge vs. Ability
    - The challenges you face are proportional to your abilities
  - Immediate Feedback
    - When you do something, you immediately know if it’s good or bad
  - Feeling of Control
    - You feel that you can control the situation, it doesn’t “just happen”
  - Concentration on the Task at Hand
    - You fully concentrate on the task, there are no distractions
  - Sense of Self Disappears
    - Your consciousness **becomes** the thing you do

Flow conditions

- Knowing what to do
- Knowing how to do it
- Knowing how well you are doing
- Knowing where to go (if navigation is involved)
- High perceived challenges
- High perceived skills
- Freedom from distractions

http://web.cs.wpi.edu/~gogo/courses/imgd5100/papers/FlowQuestionnaire.pdf

Game Mechanics

- Rules of a game
- Not printed instructions that the player is aware of
- Rules are not known beforehand
- The game teaches the player as he progresses
  - Board and card games often require that the player knows the rules, so they don’t do invalid actions
  - But digital games have a complex system that **enforces** only valid actions

- Careful! Enforcing only valid actions and teaching the player what is happening are very different things!
  - If something happens without proper feedback, players might get confused

Games are problem solving activities

- Mechanics usually creates challenges
  - There are some exceptions
- Mechanics provide tools to overcome challenges – solve problems
- Different challenges
  - Physical
  - Mental

Problems & Tools

“A game is a series of interesting choices”

Problems & Tools

- Give the player problems to solve (challenges)
  - Non-trivial problems that need to be solved
  - Optional problems that the player can ignore (but might get a reward)
  - Repetitive – defined by the game genre (same structure, different variables)
  - Problems can have sub-problems

- Give the player tools to solve these problems
  - If a problem has a single solution, it can become repetitive and tedious (*grind*)
    - Ever played a rhythm game?
  - Offer different tools for different problems – overlap is OK, sometimes even desired
  - Having multiple solutions results in **interesting choices**

Problems & Tools - Example

- There’s 20 enemies in a room trying to kill you
- Problems
  - I must survive (**enemies**)
  - I must kill them to unlock the door (**doors**)
  - I must find something to kill them with
- Tools
  - **Move** to avoid enemies and their shots
  - **Find and pick up** weapons
  - **Use weapons** to kill enemies
  - **Collect** medkits/loot from dead enemies
- Variability of enemies/levels/weapons/pickups ⇒ consistent but varying challenges

Risk & Reward

- Actions you take often have a certain risk
  - Running into a group of enemies, moving a chess piece, destructive move in a puzzle game…
- Actions you take should result in some reward
  - Loot, damage to enemies, capturing a strategic location…
- Players will always intuitively weigh the risk/reward of actions
  - Nobody will perform a high risk/low reward action
  - Risk & reward are highly context-dependent
- **Rule:** risk should be proportional to reward
  - low risk ⇒ low reward, higher action cost ⇒ higher risk
- **Exercise:** pick a genre and let’s analyze

Game Mechanics Classification

- Mechanics are more concrete than rules, include everything that affects the actual gameplay
  - Example: Monopoly mechanics: Written rules + prices and rent of all properties, as well as the text of all Chance and Community Chest cards
- **Core mechanics (core gameplay)** –activities that players constantly do
  - Mechanics the player **interacts with every second**
  - Most influential, affecting many aspects of the game
- **Meta mechanics (meta game)**
  - Mechanics wrapped around core mechanics, tying them together
  - Progression mechanics
  - Mechanics that the **player interacts with less often** (e.g. every 10 minutes)

Core + Meta mechanics

- Skyrim
  - Core mechanics: Movement, Combat
  - Meta mechanics: Storylines, leveling, achievements, role-playing…
- Core: “fire your bow 1000 times at different enemies”
- Core+Meta: “become a master stealth archer to save the kingdom”

- Meta mechanics can also give the player some rest
  - Racing game core: driving laps
  - Racing game meta: upgrading/repairing your car, buying new parts, unlocking new tracks…

5 types of Mechanics

- **Physics** – how the game world behaves
  - A core mechanic in many games: FPS/Racing/Sport games, Portal, Angry Birds…
- **Internal economy**
  - Mechanics of transactions involving game elements (**resources**)
    - Resources are consumed, collected, traded…
    - Example: what are all the resources in Counter-Strike?
- **Progression mechanisms**
  - Describes how the player progresses through the game world
    - Getting to a particular place, obtaining an item, unlocking a door, reaching a level...
- **Tactical maneuvering**
  - Placement of game units on a map, gaining advantage that way (e.g. Chess)
- **Social interaction**
  - Teams, clans, giving gifts, trading items, creating alliances, ...

	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	

Image from *Game Mechanics: Advanced Game Design*

Simulation	Detailed simulation	between missions	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 compitition 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 encou-rage player coope-ration or conflict

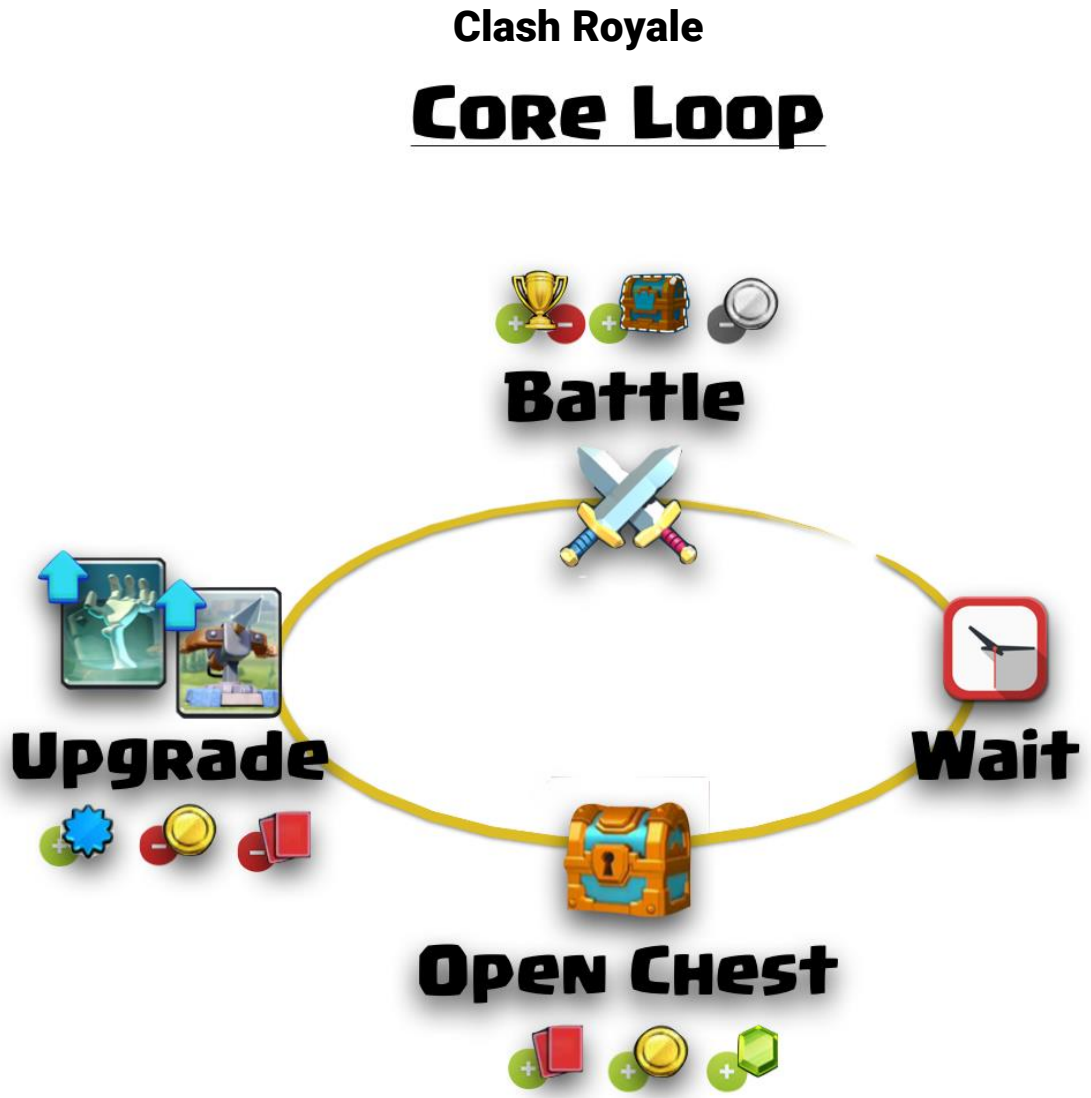
Image from *Game Mechanics: Advanced Game Design*

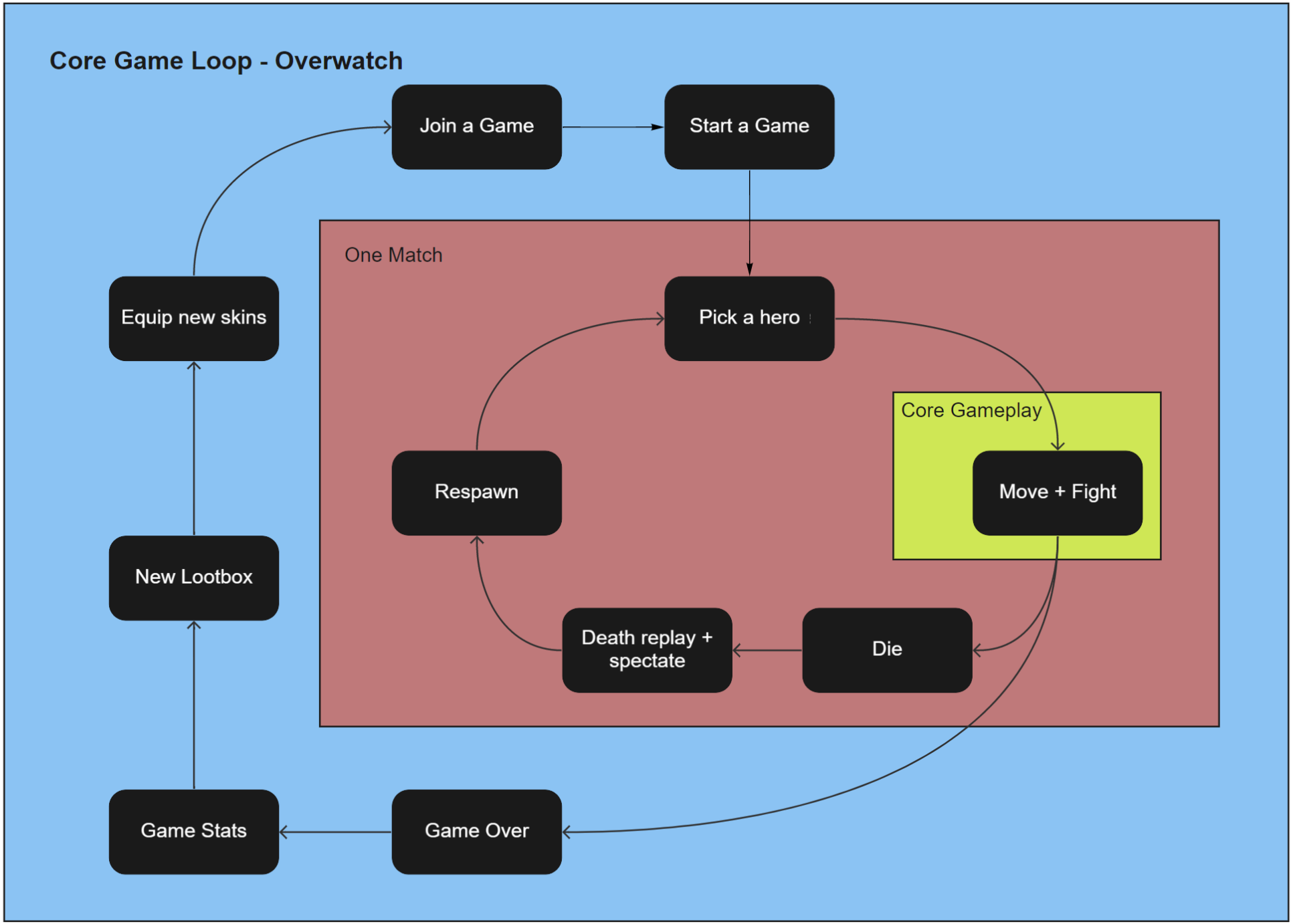
Games are about doing
the same thing
over and over again

Core (Game) Loop

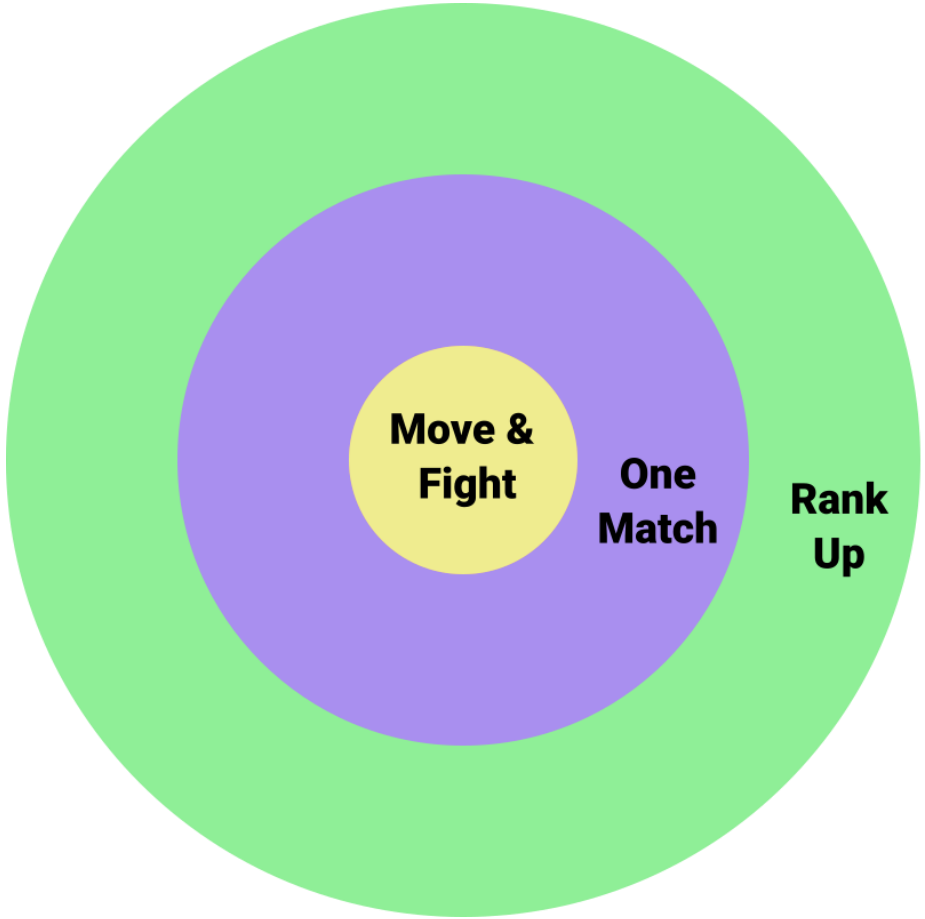
- A series of actions that is repeated over and over as the primary flow of your experience
- Defines what the player will be going through

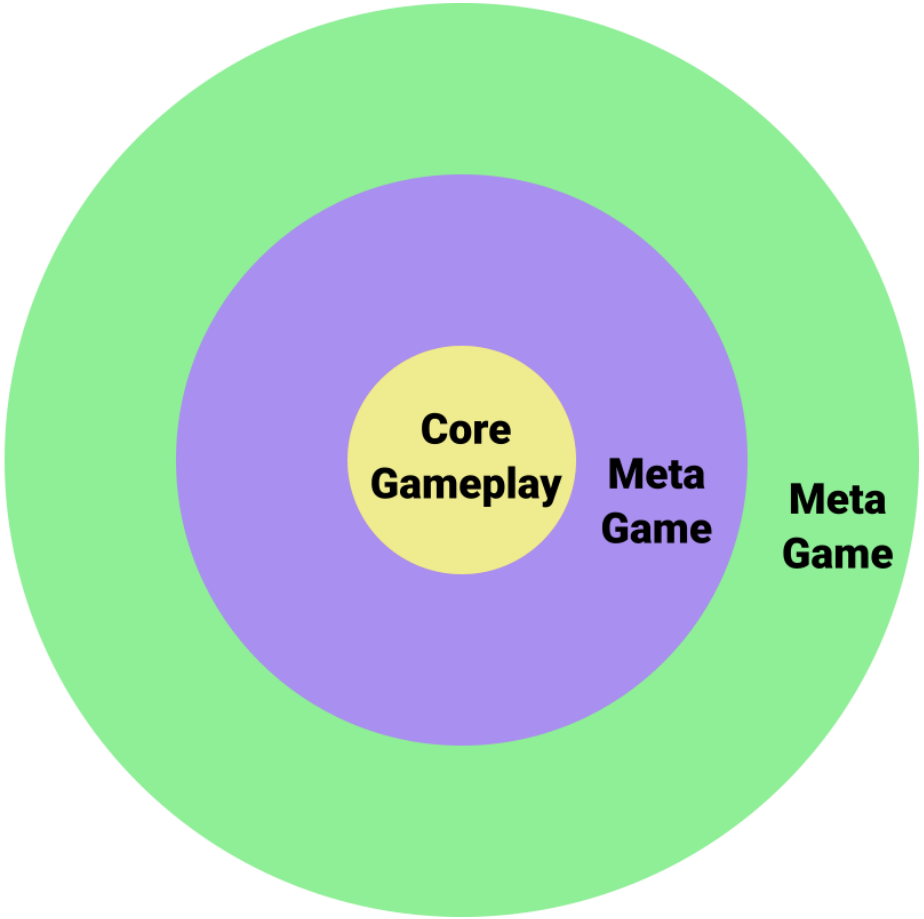
Careful! Core gameplay ≠ Core Game Loop




Core Game Loop - Overwatch
Join a Game
Start a Game
One Match
Equip new skins
Pick a hero
Core Gameplay
Respawn
Move + Fight
New Lootbox
Death replay + spectate
Die
Game Stats
Game Over

Overwatch Core vs. Meta





Game Design step-by-step guide

1. Start with an idea (mechanic, visuals, setting…), *ideally unique*
2. Clear up game mechanics that fit the idea (fewer is better)
   - Think about tools & problems, flow, motivations, mechanic types…
3. Think about what the player will be doing (core loop)
   - Every second (core), minute (core), 15min (meta), play session (meta)
4. Make a prototype
5. Give to people to play and watch them
6. Learn what works and what doesn’t by observing players
7. Come up with new ideas to change the game
8. Go back to step 1, 3 or 5 and repeat

Game Design knowledge + skills

- Creativity
- Extremely clear communication
  - Make programmers & artists understand the same vision
- Soft skills
- Introspection
- Can take criticism
- Wide array of played games
- Related fields
  - Product design, Psychology, Ergonomics, Logic, Mathematics, Programming, Art, History, Writing, Sound & Music…

Game Design Specializations

- System Design
  - Determining what the challenges & mechanics will be
  - +Balancing
- Level/World Design
  - Laying out individual challenges
- Economy Design
  - Designing economies that make sense
- Monetization Design
  - Designing what/when/how to monetize
- Narrative Design
  - Determining the story, lore, characters…
  - Close to writing

Next steps

- Get used to studying, analyzing, researching
- So You Want To Be a Game Designer - Extra Credits
- YouTube
  - Game Maker's Toolkit
  - The Architect of Games
  - Extra Credits
- Articles
  - Game Developer (previously Gamasutra)
- Books
  - The Art of Game Design: A Book of Lenses, Third Edition
  - Theory of Fun for Game Design 2nd Edition
  - Game Design Workshop: A Playcentric Approach to Creating Innovative Games, Fourth Edition