

# 01 Game Design Basics

Tvorba a dizajn počítačových hier (FMFI)

Návrh a vývoj počítačových hier (FIIT)

Michal Ferko

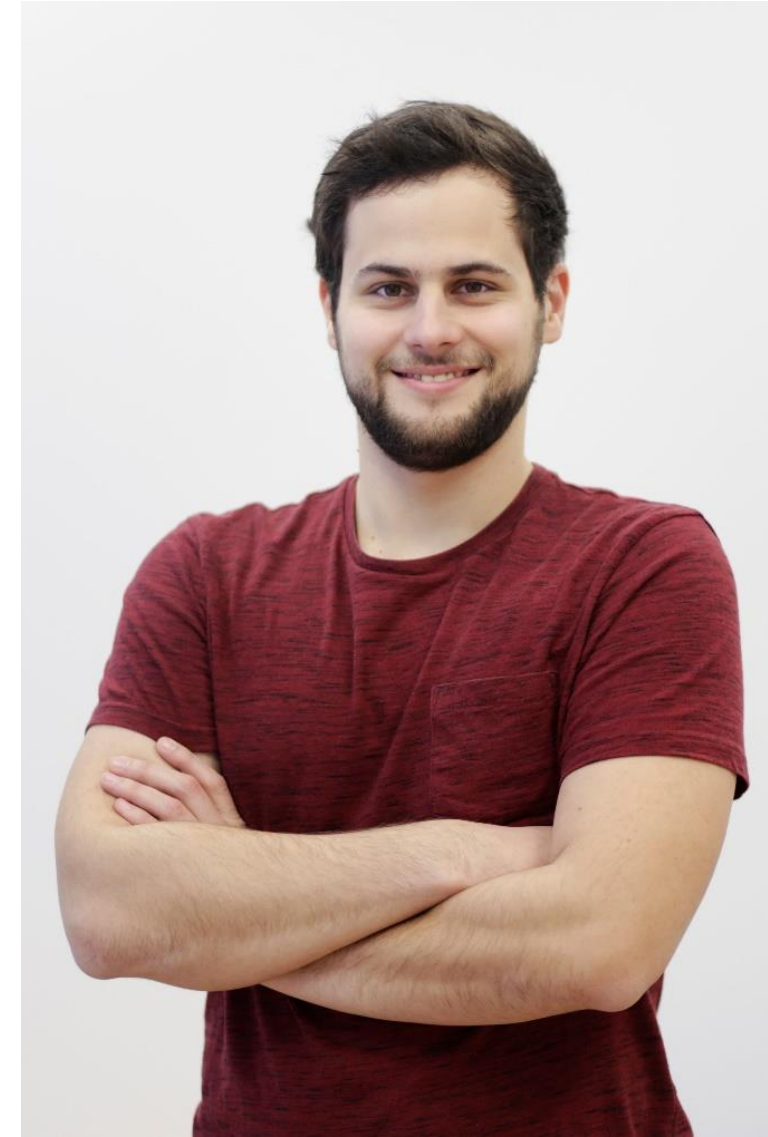
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# Michal Ferko

- Lead Unity Programmer @PowerPlay Studio
- Mentor @Butterfly Effect & @Summer Game Dev
- Lecturer @FMFI UK (since 2013) and @FIIT STU (since 2018)

## Previously

- Founder @Summer Game Dev, main organizer 2016-2018
- PhD in real-time rendering @FMFI UK
- CEO & Co-founder @eof studios
- Games Lab Master @Butterfly Effect



# **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
  - Create 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?



# 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?”
<b>Destruction</b> Guns. Explosives. Chaos. Mayhem.	<b>Competition</b> Duels. Matches. High on Ranking.	<b>Challenge</b> Practice. High Difficulty. Challenges.	<b>Completion</b> Get All Collectibles. Complete All Missions.	<b>Fantasy</b> Being someone else, somewhere else.	<b>Design</b> Expression. Customization.
<b>Excitement</b> Fast-Paced. Action. Surprises. Thrills.	<b>Community</b> Being on Team. Chatting. Interacting.	<b>Strategy</b> Thinking Ahead. Making Decisions.	<b>Power</b> Powerful Character. Powerful Equipment.	<b>Story</b> Elaborate plots. Interesting characters.	<b>Discovery</b> Explore. Tinker. Experiment.

**Why?**

# Why?





# 5 Whys

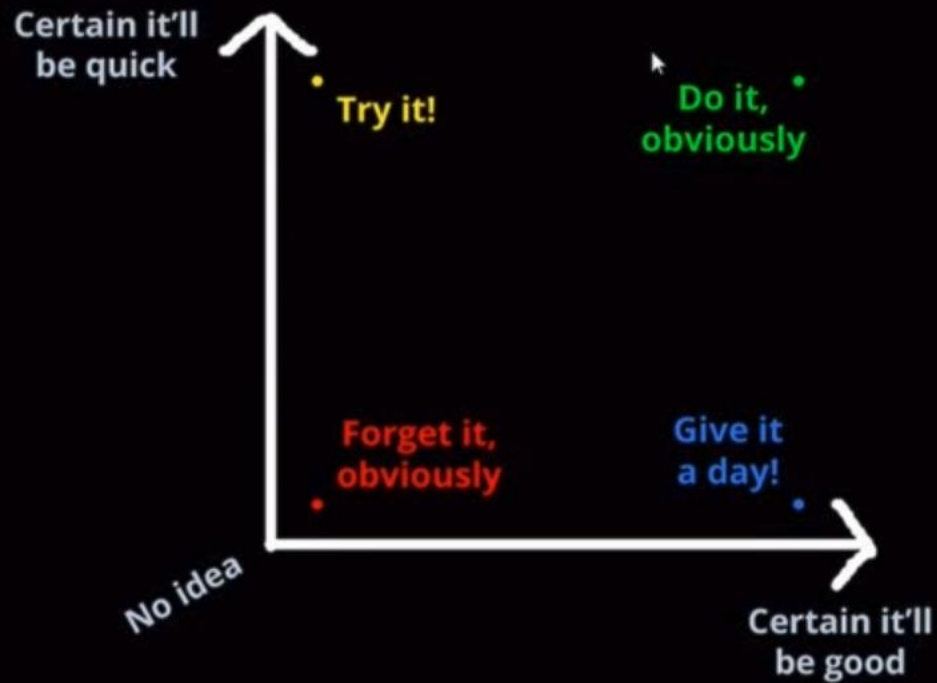


# Deliberate Game Design

- 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 cannot convince the team **why** it should be in the game, it should NOT be in the game*

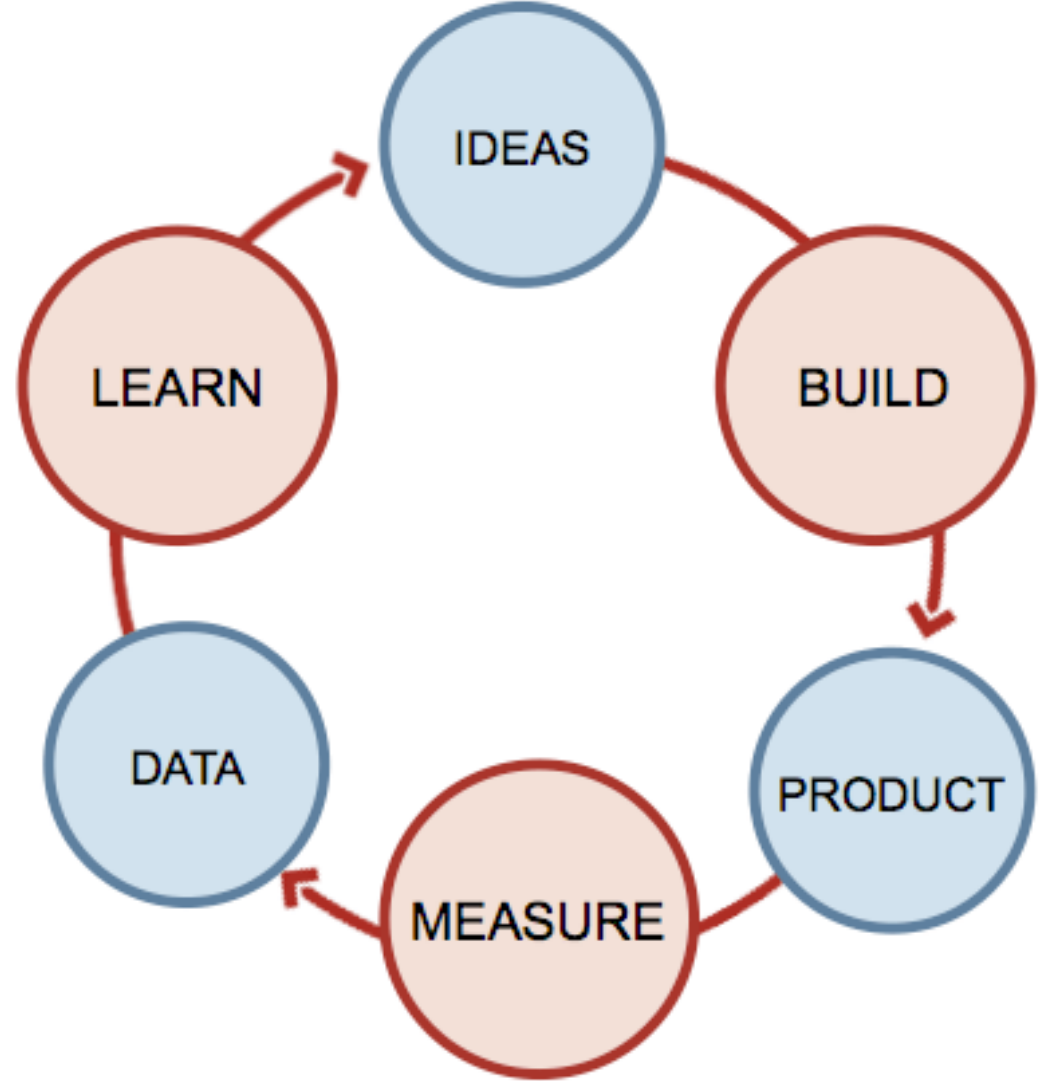


## Judging an idea without knowing how it'll work out:



# 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 for everyone involved, 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
- *A game is defined more by what you **don't** put in than by what you put in*





# 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

*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!

- Large amounts of research were 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***

GOOD THEFT	VS.	BAD THEFT
HONOR		DEGRADE
STUDY		SKIM
STEAL FROM MANY		STEAL FROM ONE
CREDIT		PLAGIARIZE
TRANSFORM		IMITATE
REMIX		RIP OFF

STEALLIKEANARTIST.COM

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

# Flow (aka being “in the zone”)

- Fully immersed in a feeling of energized focus, full involvement, and enjoyment into the process of the activity
  - Experience of time is altered, other needs become negligible...
- Flow attributes
  - Clear Goals
  - Balance between Challenge vs. Ability
  - Immediate Feedback
  - Feeling of Control
  - Concentration on the Task at Hand
  - Sense of Self Disappears

[https://www.jenovachen.com/flowingames/Flow\\_in\\_games\\_final.pdf](https://www.jenovachen.com/flowingames/Flow_in_games_final.pdf)

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

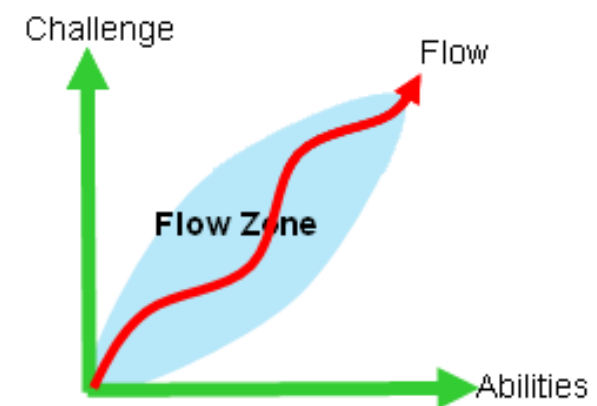


Figure 2 Player in-game Flow experience

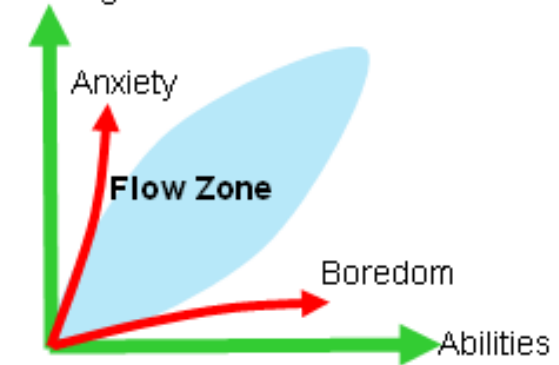


Figure 3 Player encounters psychic entropies

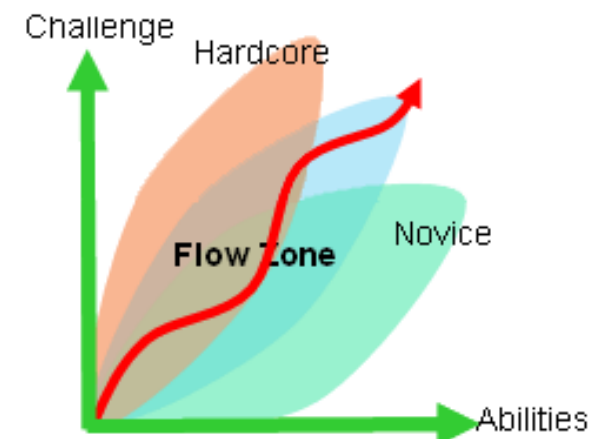


Figure 4 Different players and Flow Zones

# 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
  - This is where digital games differ from board games and card games
  - Board and card games often require that the player knows the rules, so he does not make 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!



# 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 get rewarded by solving them
  - Repetitive – defined by the game genre
    - Use same structure, different variables – different enemies, locations, quest types...
  - Problems can have sub-problems
- Give the player tools to solve these problems – **interesting choices**
  - 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

# 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



**LOCKED IN  
A ROOM  
WITH DEMONS**



**DEMONS LOCKED  
IN A ROOM  
WITH YOU**

# 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...
- Action 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 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)** – essential activities that players perform over and over
  - Mechanics the player interacts with every second
  - Most influential, affecting many aspects of the game
  - Interact with mechanics of lesser importance
- **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)

# Example: Skyrim

- Storylines
- Movement
- Combat
- Leveling
- Lockpicking

# Example: Skyrim

- Storylines – meta mechanics
- Movement – core mechanics
- Combat – core mechanics
- Leveling – meta mechanics
- Lockpicking – meta mechanics?



# 5 types of Mechanics

- **Physics**
  - A core mechanic in many games: FPS/Racing/Sport games, Portal, Angry Birds, Braid
- **Internal economy**
  - Mechanics of transactions involving game elements that are consumed, collected, traded. Typically, these elements are called **resources**
  - Example: resources in Counter-Strike – what are those?
- **Progression mechanisms**
  - Describes how the player progresses through the game world
  - Getting to a particular place, obtaining an item, unlocking a door, ...
- **Tactical maneuvering**
  - Placement of game units on a map
  - Strategic advance by placing units in possible locations (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	Image from <i>Game Mechanics: Advanced Game Design</i>	
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	

## Simulation

Detailed simulation

between missions

competitions,  
tournaments

Image from *Game Mechanics:  
Advanced Game Design*

## 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

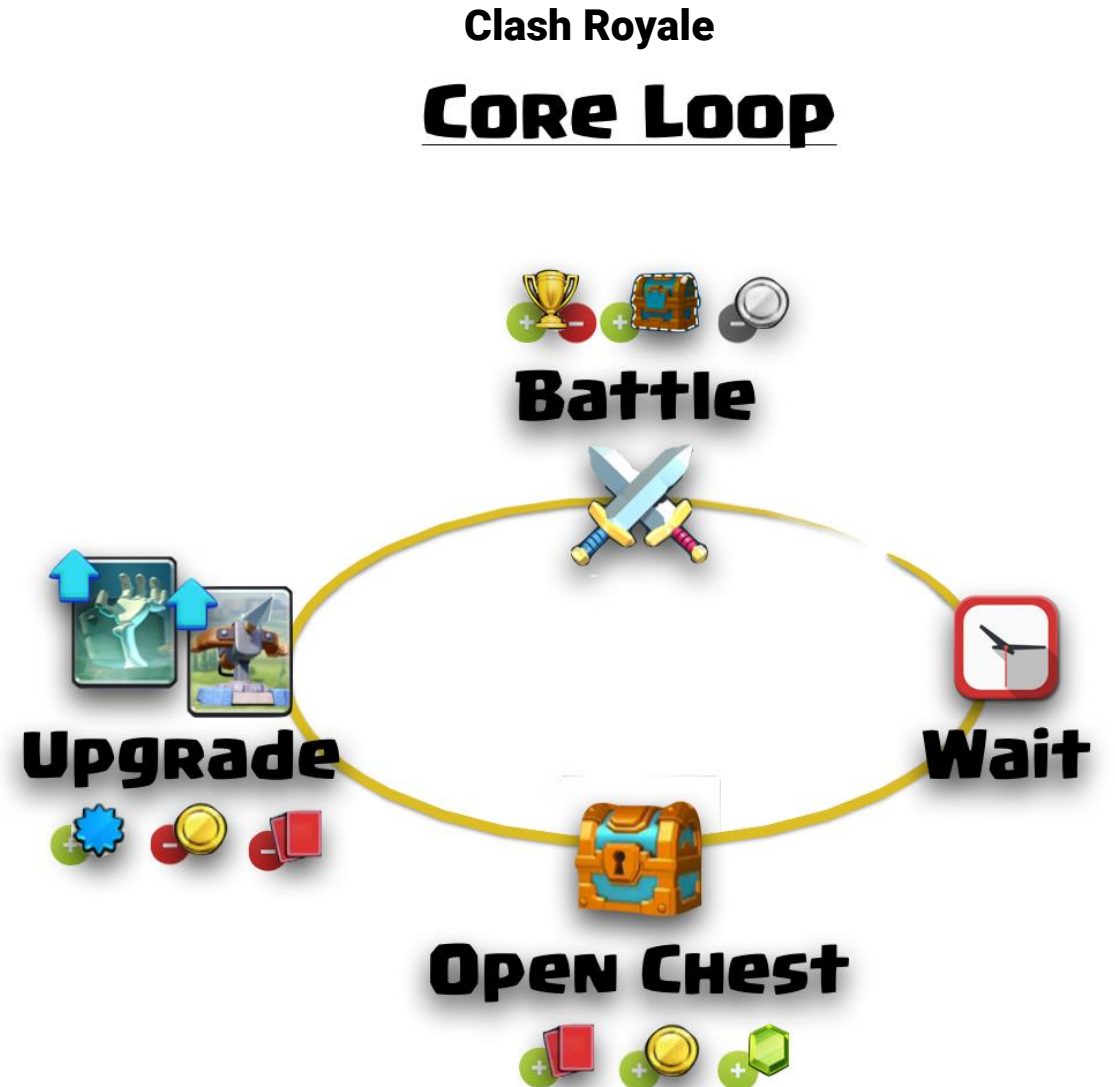
Players exchange  
in-game resources,  
mechanics encour-  
age player coope-  
ration or conflict

**Games are about doing the same  
thing over and over again**

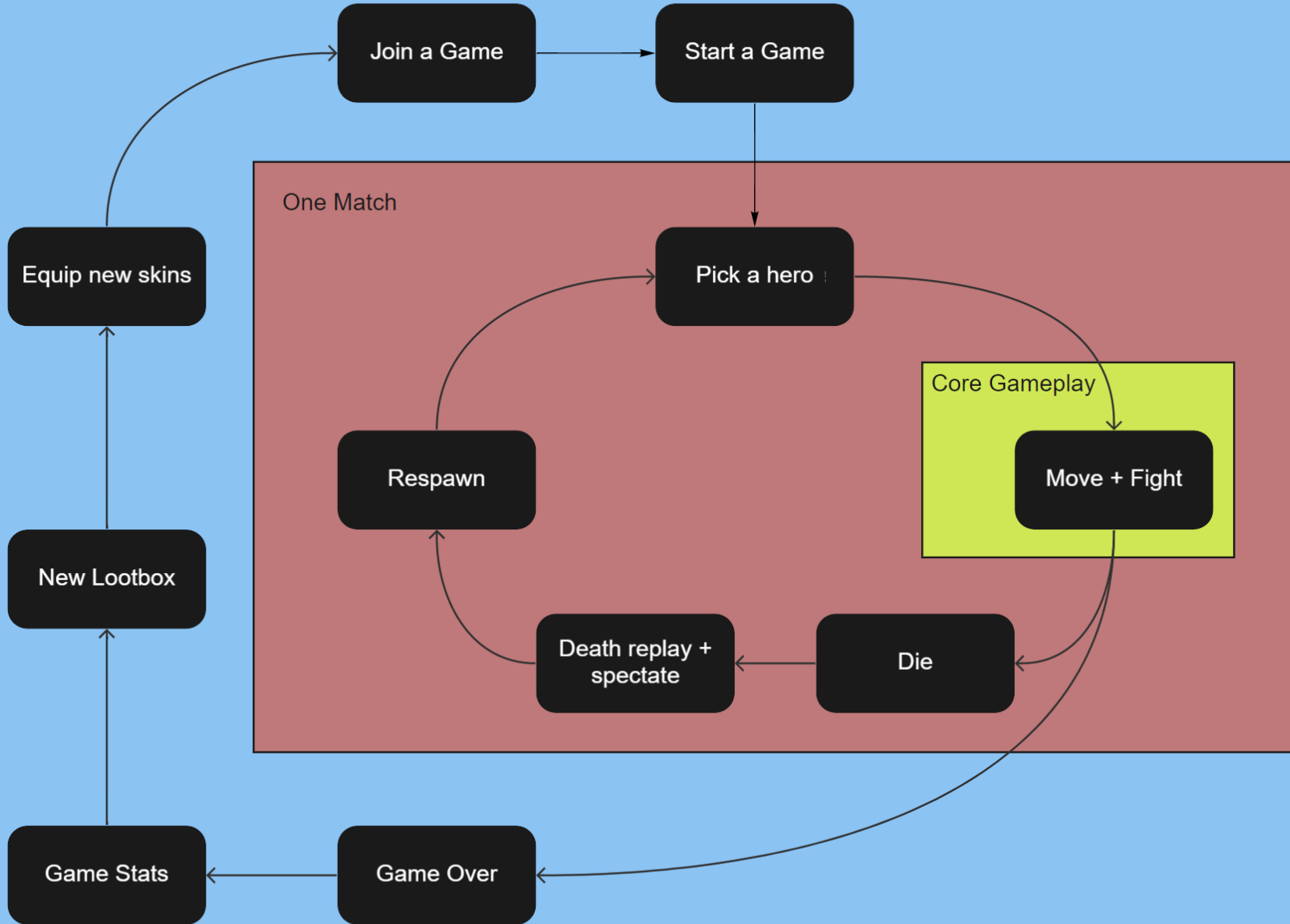
# Core (Game) Loop

- 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  $\neq$  Core Game Loop



# Core Game Loop - Overwatch



# 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
  - [Extra Credits](#)
  - [Game Maker's Toolkit](#)
  - [The Architect of Games](#)
- 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](#)