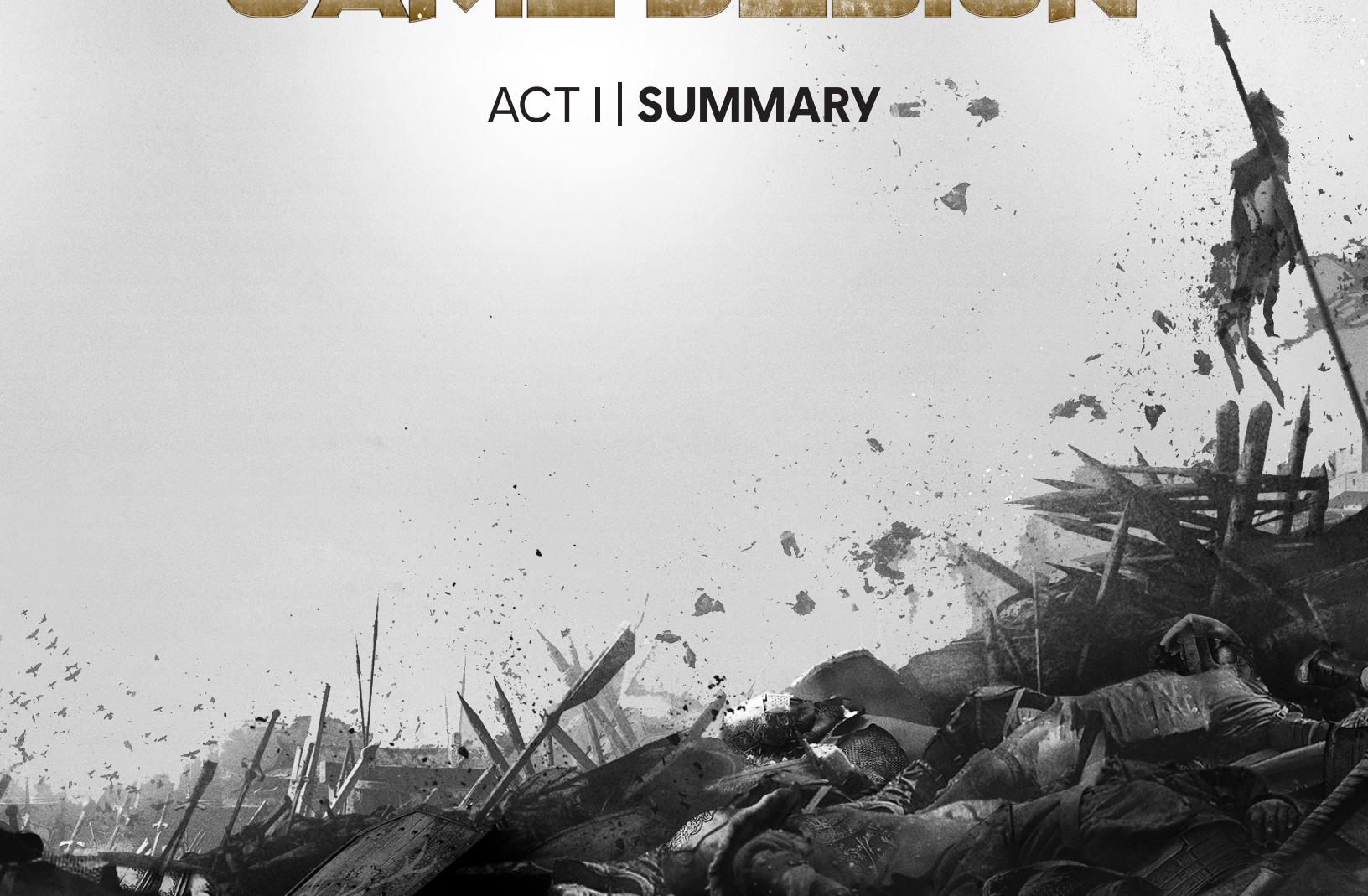
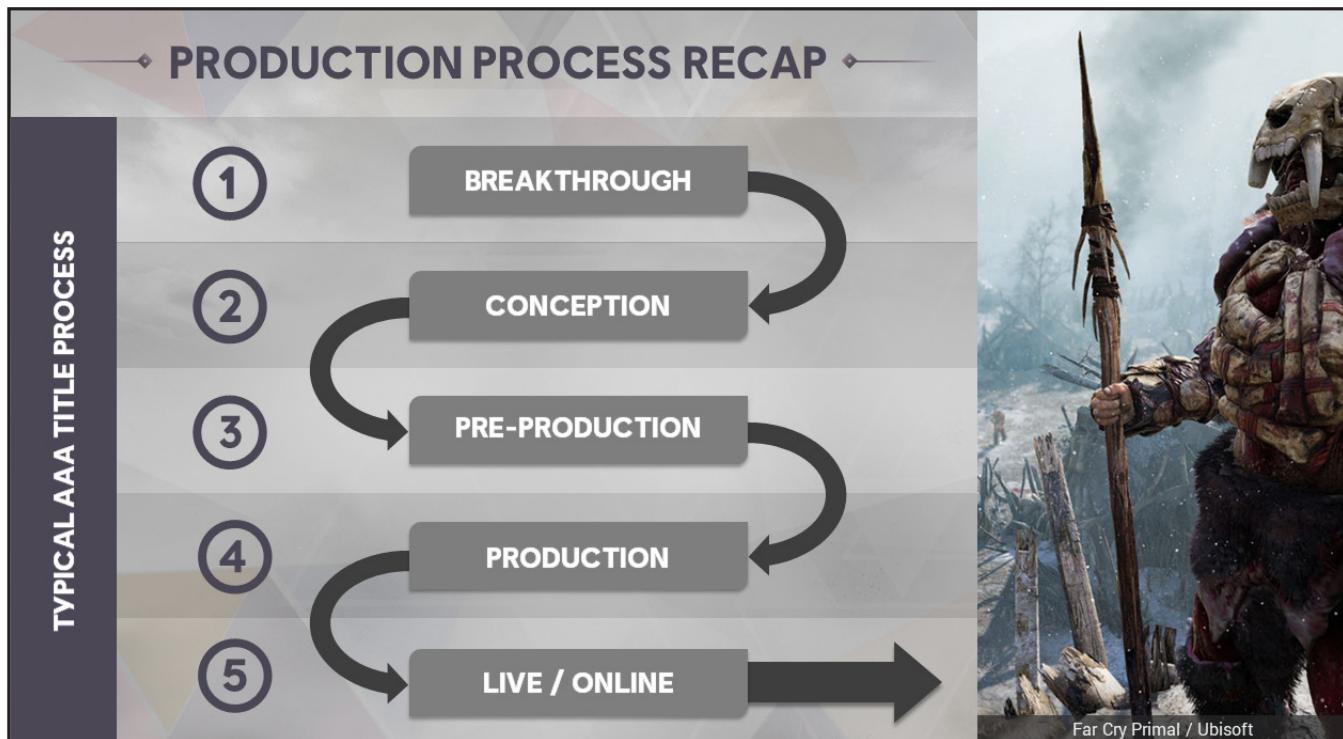


RATIONAL GAME DESIGN

ACT I | SUMMARY



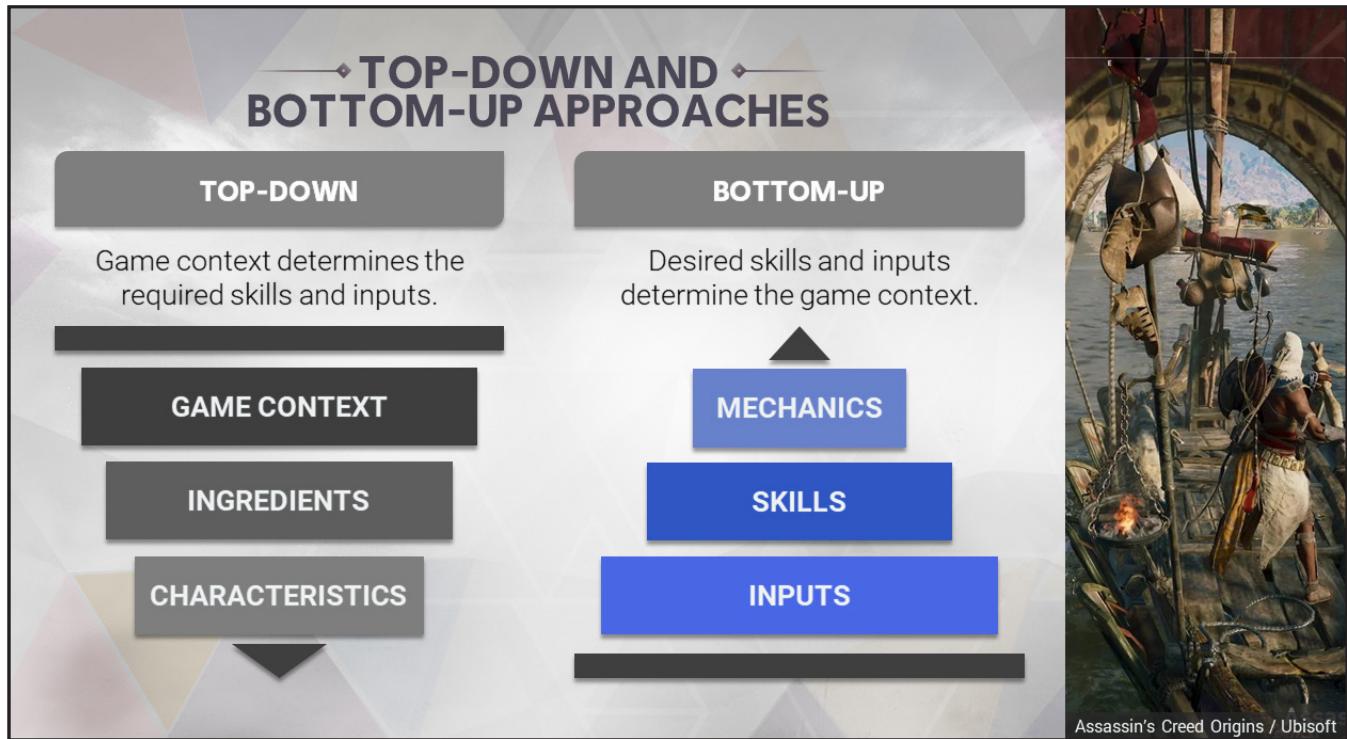
PRODUCTION PROCESS RECAP



The production steps and gates are divided in 5 main categories:

1. **BREAKTHROUGH**: Find an innovative feature for a game.
2. **CONCEPTION**: Conceive the experience, the universe, and the theoretical mechanics of the game at a high-level.
3. **PRE-PRODUCTION**: Test and validate the Conception ideas and create a First Playable Prototype.
4. **PRODUCTION**: Produce the entire game and the last deliverable, the Gold Master.
5. **LIVE / ONLINE**: "Game as a service", keep producing content to extend game longevity.

TOP-DOWN AND BOTTOM-UP APPROACHES

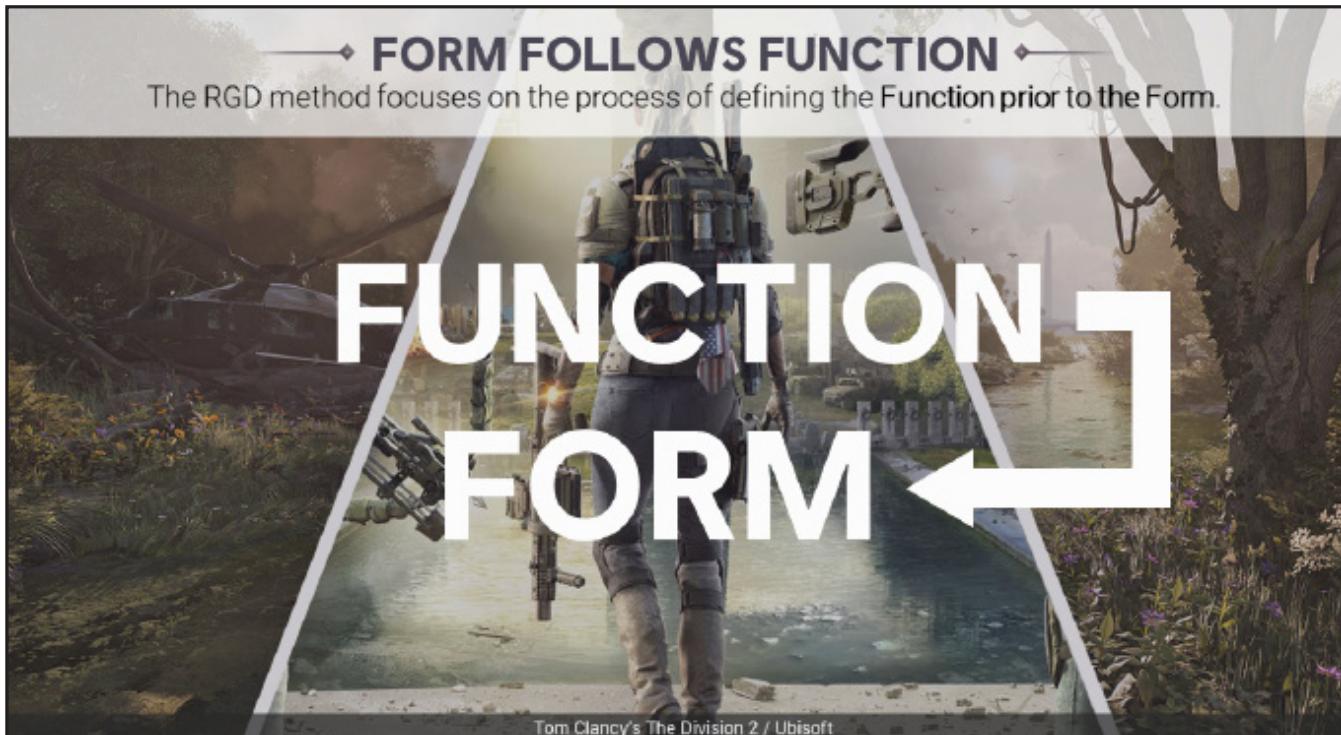


The Top-Down approach consists of first determining the core fantasy/emotions/feelings that we wish the player to experience, and then selecting and developing the specific game mechanics to achieve that goal. **In Top-Down, fantasy will guide the gameplay.**

The Bottom-Up approach consists of first determining the core gameplay elements, game mechanics, and involved player skills that we wish the player to be challenged with. We then build the fantasy around the gameplay mechanics. **In Bottom-Up, gameplay will guide the fantasy.**

One approach is not superior or preferable to the other. The most engaging games often have a fantasy that communicates the game mechanics without revealing its inner workings, and game mechanics that allow the player to live out the fantasy in an engaging and fulfilling way.

FORM FOLLOWS FUNCTION



Form and Function have to work together to offer a complete experience.

In the context of our rational game design process, we use form follows function as a design principle, in order to help us break apart all our design components and understand how they influence each other.



FORM AND FUNCTION



The image shows a scene from the video game Tom Clancy's The Division 2. It depicts a desolate, post-apocalyptic environment with ruined buildings, a deer in the foreground, and a soldier standing in the background. The sky is overcast with a warm glow from the setting or rising sun.

◆ FORM AND FUNCTION ◆

FORM

The Form is the **expression** of a concept.
It provides clear **signs** of its functions.

VISUALS


SOUNDS


VIBRATION/TOUCH


SCENT


The Form is the expression of a concept. It provides clear signs of its functions.

It allows the player to navigate and understand the game's environment. It also allows the player to develop a connection between the game's universe and its characters.

It's important to note that all elements of the form include (but are not limited to):

- Visuals
- Sounds
- Vibration (or touch)
- And sometimes scent, like in amusement parks.



FORM AND FUNCTION



Assassin's Creed Syndicate / Ubisoft

◆ FORM AND FUNCTION ◆

FUNCTION

The Functions are the **inner mechanisms** of the Form.
They should guide the creation of the Form.

GAMEPLAY

GAME MECHANICS

PLAYER SKILLS

INPUTS

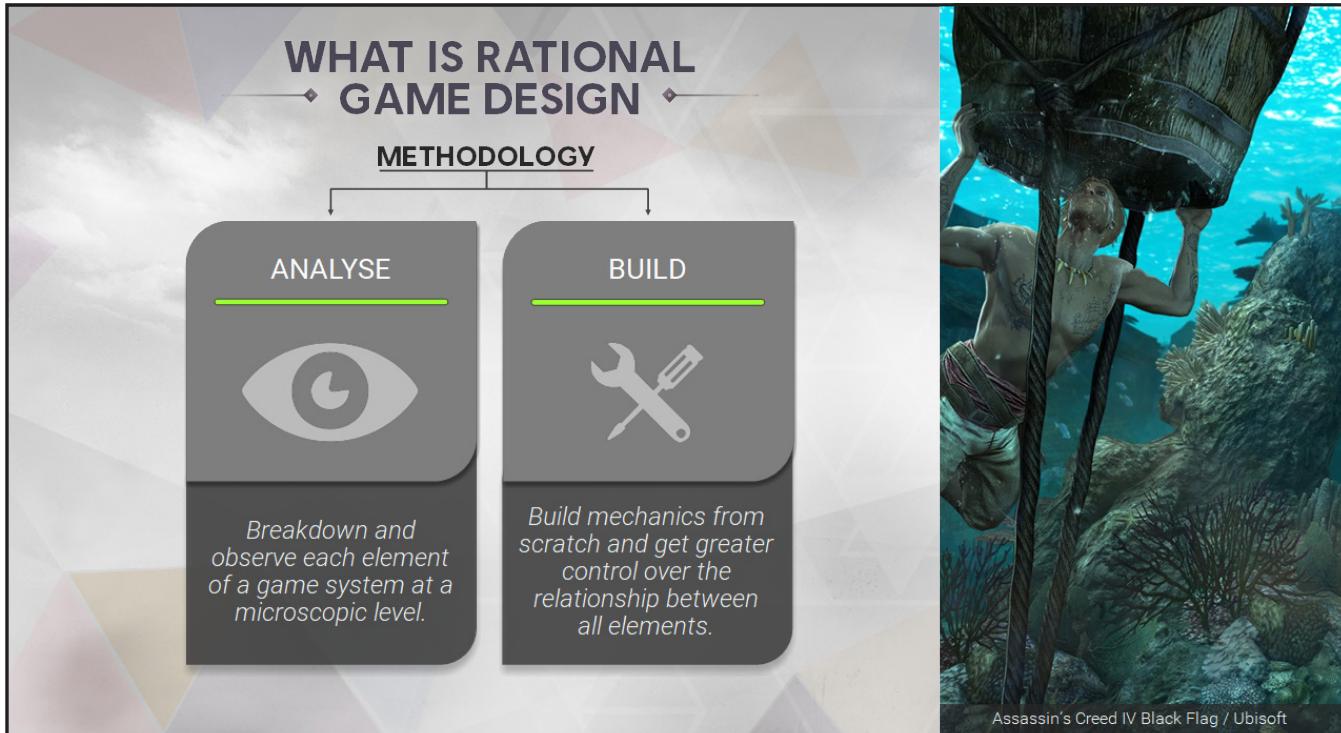
ATOMIC
PARAMETERS

The Functions are the inner mechanisms of the Form.
They should guide the creation of the Form.

It allows the game creators to conceive a game with clear intentions in mind, in harmony with the form.

What we call function, includes all the features of the gameplay, such as mechanics, player skills and inputs, and atomic parameters.

WHAT IS RATIONAL GAME DESIGN



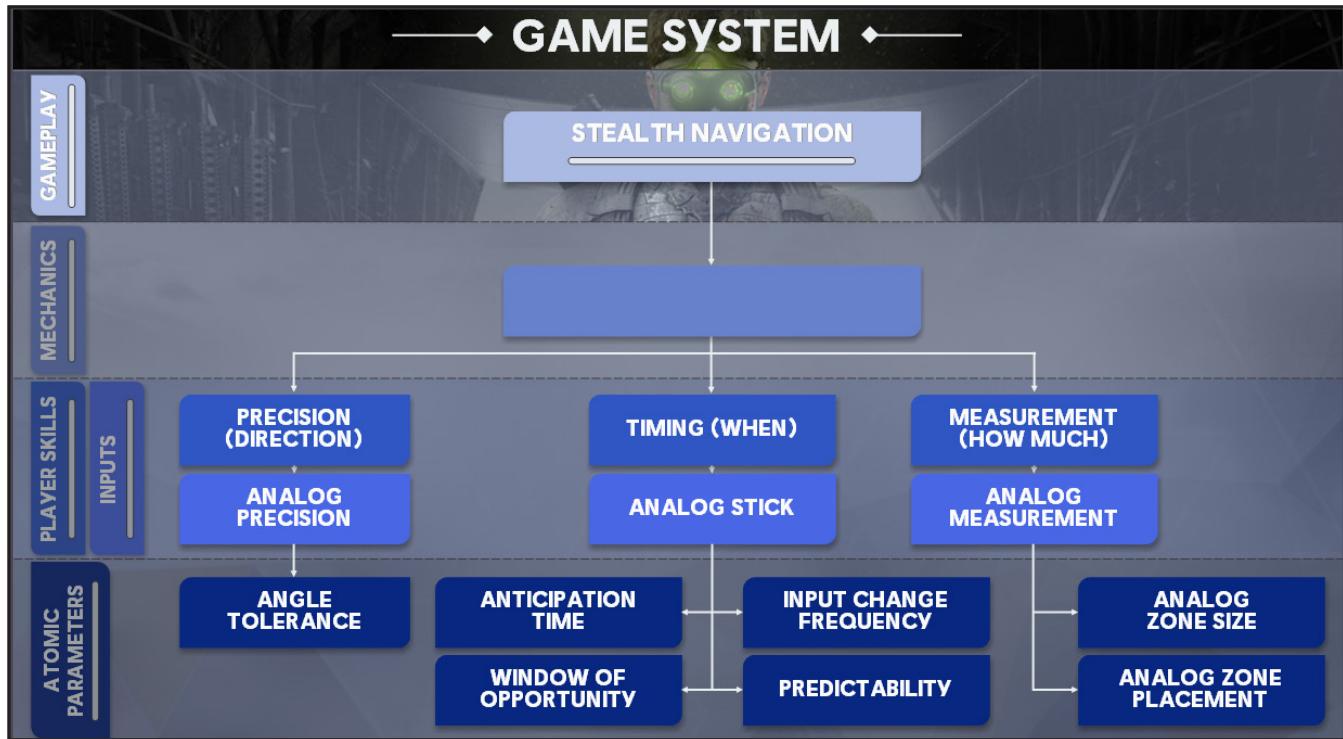
What is Rational Game Design? Rational Game Design is a design method.

We use this method to breakdown and observe each element of a game system at a microscopic level.

We also use this method for building deep game mechanics and exercising greater control over the relationship between all gameplay elements.

Rational Game Design is a **player centric approach**. It focuses on a player's skills and inputs.

GAME SYSTEM



The Game System represents **the entire interactivity** in a game.

GAMEPLAY is used in this case to represent a family of activity, or what we call game mechanics.

A **MECHANIC** is a challenge required in a particular activity that can evolve from easy to hard.

A **PLAYER SKILL** is a skill from the player that will be tested by the game mechanics, and that will help them progress in the game. There are three main types of skills: Physical, Mental and Social.

An **INPUT** is a form of power or energy, like pressure on a joystick that is converted to an output in the game. An input can also be mental or social and not only physical.

An **ATOMIC PARAMETER** is a factor that makes a mechanic more or less difficult. The Game System represents **the entire interactivity** in a game. It regroups the different main categories of gameplays, mechanics, player's skills and inputs, and atomic parameters.

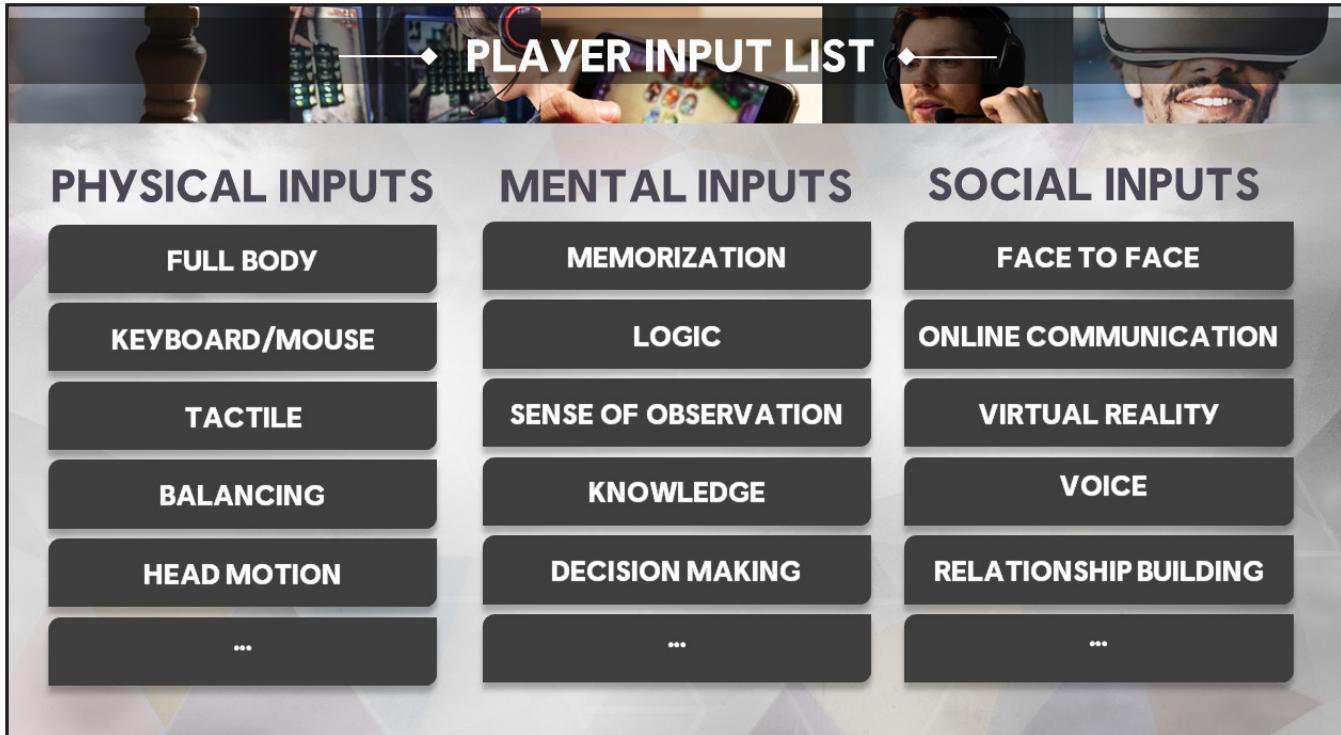
PLAYER SKILL LIST

PLAYER SKILL LIST		
TYPICAL PHYSICAL SKILLS	TYPICAL MENTAL SKILLS	TYPICAL SOCIAL SKILLS
TIMING	MANAGEMENT	LEADERSHIP
REFLEXES	SPATIAL	COMPETITION
MEASUREMENT	STRATEGY	COOPERATION
PRECISION	TACTICAL	BEHAVIOR ANALYSIS
ENDURANCE	CONCENTRATION	MEDIATION
...

Here is a short list of Physical, Mental and Social player skills that we have covered in Chapter 3.

This list is not exhaustive but can be used as an inspiration for your mechanics.

PLAYER INPUT LIST



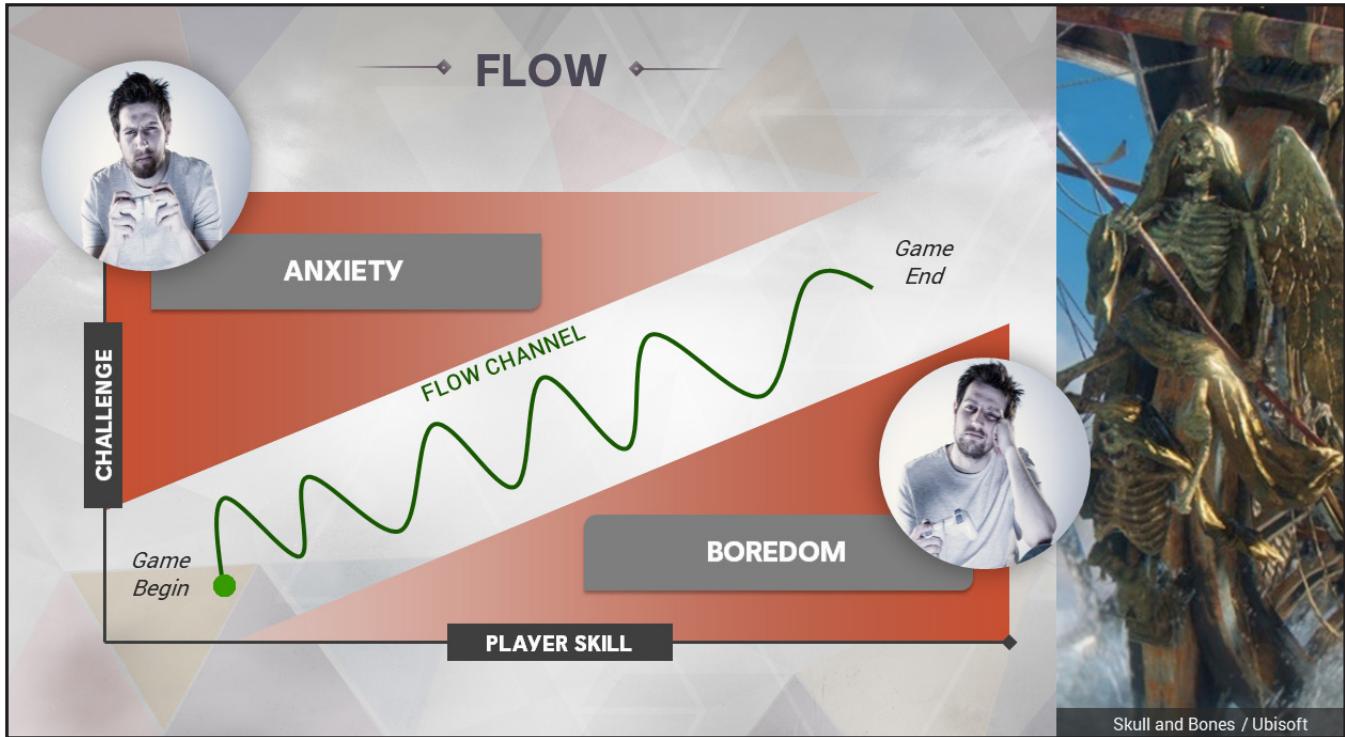
Physical skills are expressed through a type of physical input. For example, using buttons on a gamepad.

Mental skills manifest through different types of abilities. These abilities challenge our memorization, logic, sense of observation, and so on.

Social skills are required in different types of interactions, such as in face-to-face and online communication. Now, we can even add VR socializing to our types of social interactions.

This list is not exhaustive but can be used as an inspiration for your mechanics.

THE FLOW



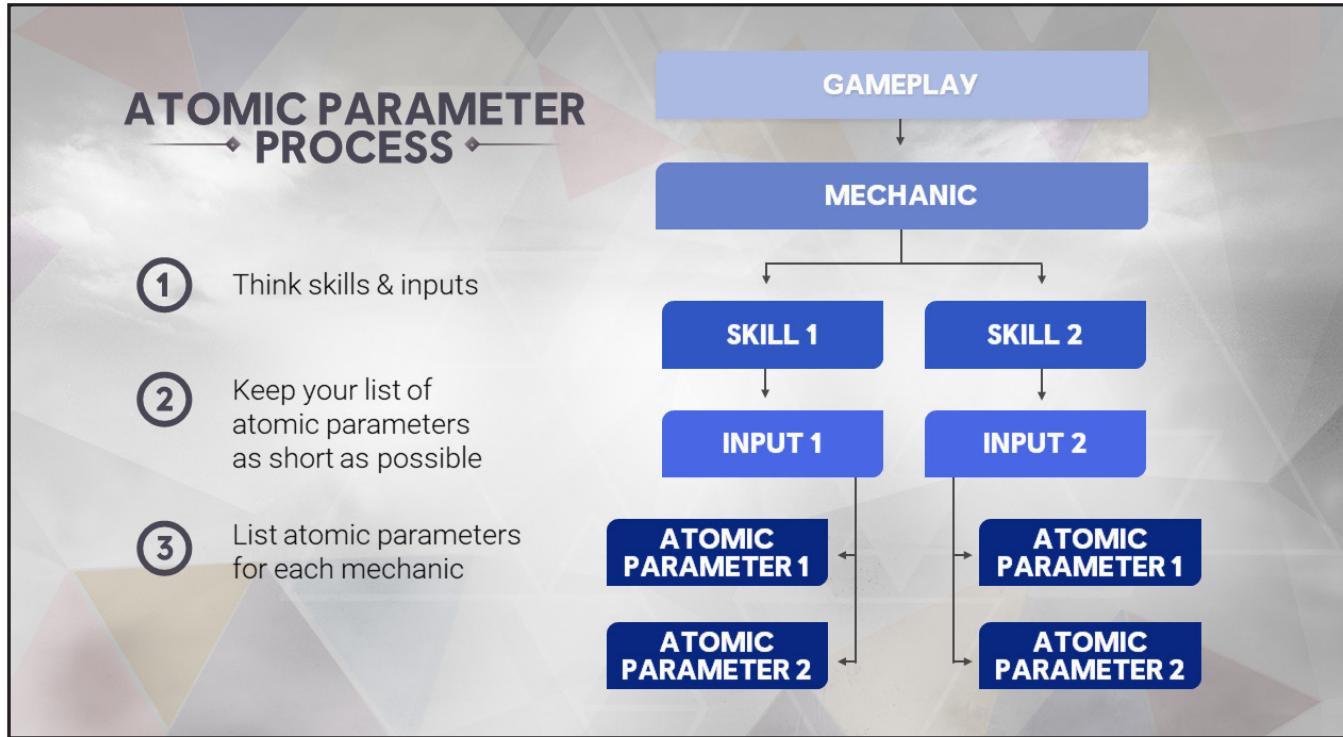
The **FLOW**, also called macro-flow, within our Ubisoft Rational Design Method, is a mental state in which the player experiences great excitement and fun for hours.

One of the main ways to maintain the Flow and ensure fun for the player throughout the game is to adapt and increase the level difficulty of the game as the player's skills increase.

If the difficulty increases too slowly, the player may get bored. If the difficulty increases too quickly, the player may get stressed and anxious. It is about keeping the player in the "flow channel" between boredom and anxiety.

That is why studying game mechanics at an "atomic" level is essential to ensure hours of fun for the player.

ATOMIC PARAMETER PROCESS



1. Think skills & inputs

As long as you use words describing the form (the game context), you're not yet thinking about skills and inputs.

2. Keep your list of atomic parameters as short as possible

Try to end with a small number of atomic parameters (2 to 6 on average) per mechanic.

3. List atomic parameters for each mechanic

Each mechanic, through its skills and inputs, has its own parameters. Some parameters might repeat themselves, but make sure to list them for each mechanic individually.

ATOMIC PARAMETERS TABLE

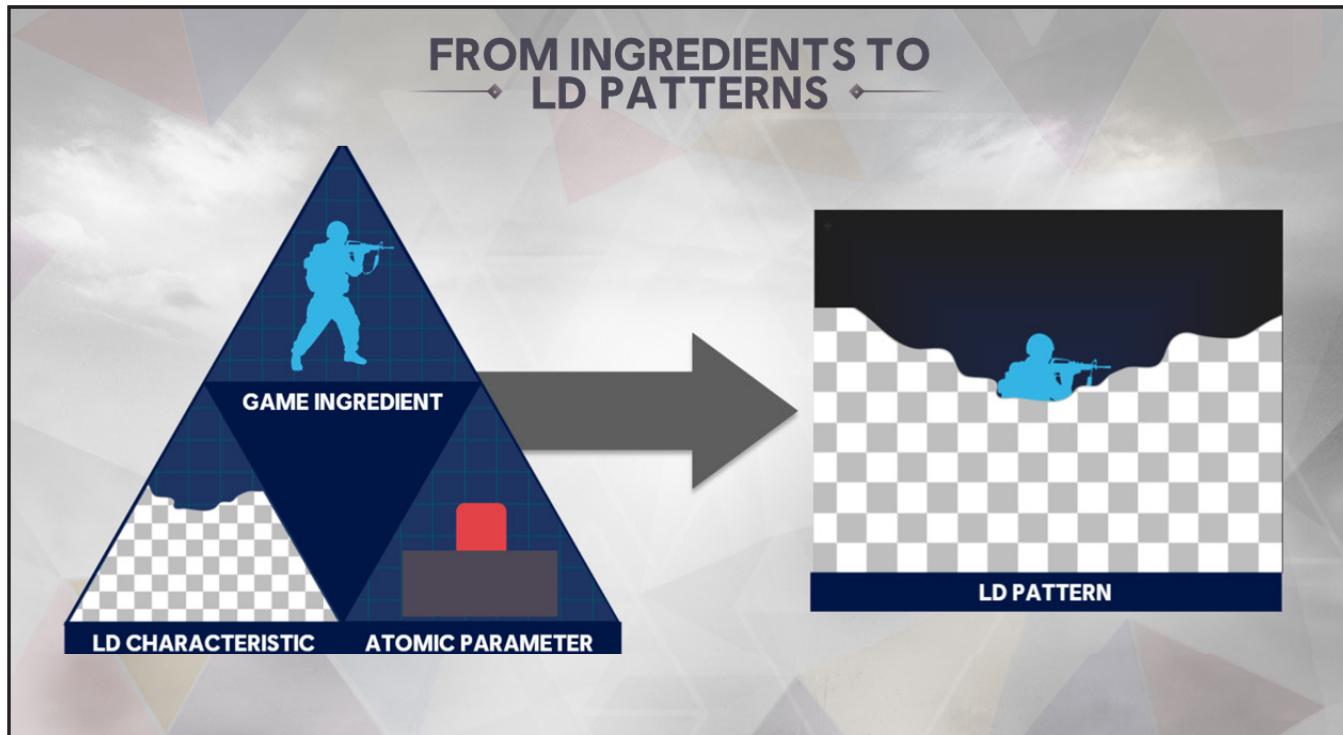
Use **values** to describe easy, medium, and hard cases for your atomic parameters.

	NULL	EASY	MEDIUM	HARD
PRECISION SKILL	SIZE OF TARGET	Full Screen (100%)	Almost Full Screen (90% of screen)	Partial (20% of screen)
	DELTA OF POSITION	Perfectly Centered	Small Delta (<20% screen)	Medium Delta (20 to 50% screen)
	SPEED OF TARGET	Stationary	Slow Speed (approx. 25% screen/s)	Medium Speed (approx. 50% screen/s)
TIMING SKILL	TARGET PREDICTABILITY	No Movement	Predictable (1 direction)	Alteration (waypoints path)
	WINDOW OF OPPORTUNITY	Always Available (100%)	Almost Always Available (>80%)	Sometimes Available (>50%)
	SHOOTING DURATION	One Shot One Kill	0.5 Secs to Kill (or 1 shot)	2 Secs to Kill (or 5 shots)
An atomic parameter is a factor that makes a mechanic more or less difficult.				

Use **values** to describe easy, medium and hard cases for your atomic parameters.
Your table will serve as a reference for your development team.

Values will change and adapt during prototyping.

FROM INGREDIENTS TO LD PATTERNS



It is important to understand that there is no single starting point for creating an LD pattern.

We can start with Game ingredients, LD characteristics, or Atomic Parameters, as defining one of the components can help us define the remaining ones.

Once all elements are combined, we then have a complete LD Pattern. LD patterns are concrete game situations that we can analyse with the atomic parameters. They allow creating any type of challenge with a moderate amount of well-conceived ingredients.

LD PATTERNS AND INGREDIENTS

FROM INGREDIENTS ◆ TO LD PATTERNS ◆

INGREDIENT

The interactive elements of the game (obstacles, enemies, covers, pickups...)

Form with characteristics extracted from the atomic parameters.



LD PATTERNS

Allow to create any difficulty with a moderate amount of well conceived ingredients.

Concrete game situations that we can analyse with the atomic parameters



Ingredients are the interactive elements of the game. For example, obstacles, enemies, covers, pickups, etc. The ingredient's form characteristics are extracted from the atomic parameters.

LD patterns are concrete game situations that we can analyse with the atomic parameters. They allow creating any type of challenge with a moderate amount of well-conceived ingredients.



SIGNS AND FEEDBACK

GOLDEN RULES OF SIGNS AND FEEDBACK

SIGNS

- Self-explanatory
- Understood by players
- Non-ambiguous
- Perceptible (contrasted enough)

FEEDBACK

- For every interaction
- Immediate
- Clearly related to the action just done
- Understood by players
- Perceptible (contrasted enough)

Feedback should be present for every interaction, be immediate, clearly related to the action, understood by players and, just like signs, perceptible (contrasted enough).

Remember, similar game ingredients should have similar meanings and behaviors. Different game ingredients should have different meanings and behaviors.



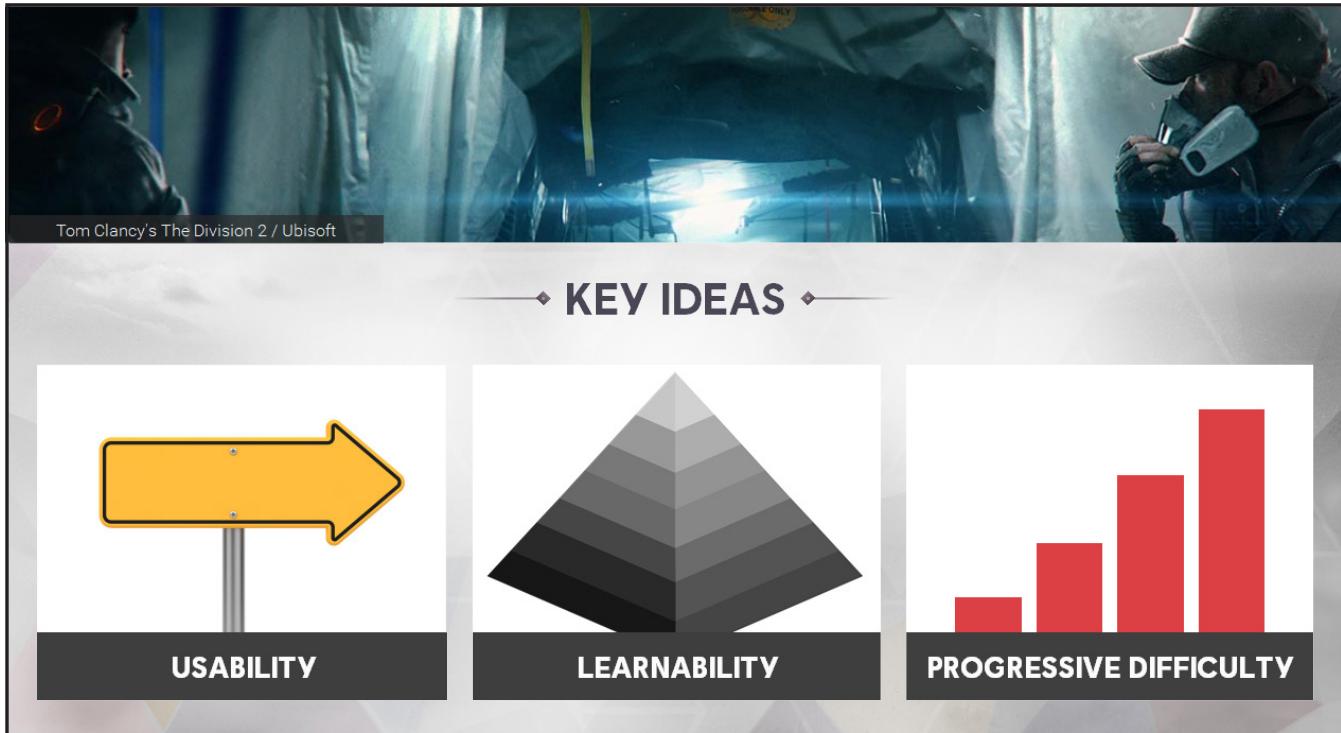
SIGNS AND FEEDBACK TABLE

◆ GAME MECHANIC ◆ SIGNS AND FEEDBACK

	SIGNS	FEEDBACK DURING ACTION	FEEDBACK SUCCESSFUL	FEEDBACK UNSUCCESSFUL
USER INTERFACE	Turns to red when over a target	Reticule width	"X" appears on the crosshair	N/A
VISUAL FX	N/A	Muzzle flash from the gun, Bullet trail	NPC blood	Bullet ricochet FX decals on the wall
AUDIO	N/A	Bullets sound	Corpse sound when hit	Sound of material hit (wall, ground)
BARKS	Groans specific to the NPC type	Groan when hit	Specific final groan	N/A
ANIMATION	N/A	Shaking arm and gun	NPC body shaking, falling on the ground	Keeps on moving, shooting
CAMERA	N/A	Slight camera shaking	N/A	N/A

Once the signs and feedback table is prepared by the Designer, each characteristic will have to be worked within their respective department, such as art, audio and animation teams.

THREE IMPORTANT CONCEPTS



These three concepts should be known not only by game designers, but also by all game creators. These learning strategies are relevant to all production teams.

Usability refers to the ability to design interactions in order to avoid confusion for all players. By providing an accessible environment, it also makes players of all levels more comfortable to play.

According to the level of priority of the knowledge you want to transmit to players, you can think of the **Learnability** pyramid as a way to classify each types of learning strategies.

Progressive difficulty is about creating and maintaining progressive challenges through the game. Each new game ingredient or mechanic exposed to the player should go through the loop of: Teasing, Learning, Practicing, Mastering. The last step is about Combining newly introduced ingredients or mechanics together.