**Engineering Method**

**Application for solving a problem**

**Jhonatan Alexis Arenas Bonilla**

# Phase 1. Problems identify:

## **Problem definition:**

Causes and Symptoms:

The principal symptom of the problem is that, due of the many suggestions received by players in the last months, made Epic Games.inc to be disquiet. The reason for this, is based on reports where the players express some of their inconvenience with the gameplay in their matches.

Regarding previous petitions, derivates three problems:

1. There are a difficult by users to find balanced matches, that does not allow them to compete against people who have the same abilities.
2. Absence of mechanism that allow players to face rivals that have the same platform.
3. Scarcity of variety of game modes to celebrate special occasions.

Problem’s definition:

Epic games.inc wants a proposal on how to implement new features that allow satisfying requests to their product.

## **Requirements:**

Functional Requirements:

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| **Name** | Rating System | **Number #** | 1 |
| **Description** | Allows to classify players and match them in balanced games where players have the most similar abilities possible and equals physicals conditions. This last part means ping and geolocation. | | |
| **Input** | Players profile  History of players games.  Players ping | | |
| **Output** | Balanced Queues where optimal and equals conditions are for each player. | | |

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| **Name** | Rank player | **Number #** | 1.1 |
| **Description** | Allows to define in a standard classification the ability of a given player | | |
| **Input** | Player profile  History of player’s games.  Standard | | |
| **Output** | A ranked player | | |

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| **Name** | Compare Players | **Number #** | 1.2.1 |
| **Description** | Mechanism that allows to assert whether a player is betters, or has a better network condition, than other. Otherwise, conclude that their abilities and physical condition (Network) are near or equals. | | |
| **Input** | Players rank  Player Geolocation  Players Ping  Standard | | |
| **Output** | An assert that provide information about conditions equality. | | |

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| **Name** | Rank compare | **Number #** | 1.2.1.1 |
| **Description** | Mechanism that allows to assert whether a player is betters than other in ranking approach. Otherwise, conclude that their abilities are near or equals. | | |
| **Input** | Players rank  Standard | | |
| **Output** | An assert that provide information about Rank equality. | | |

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| **Name** | Latency compare | **Number #** | 1.2.1.2 |
| **Description** | Mechanism that allows calculate ping’s standard deviation for a set of players. | | |
| **Input** | Set of players  Player Geolocation  Players Ping  Standard | | |
| **Output** | Give standard deviation for a set of players. | | |

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| **Name** | Match Players | **Number #** | 1.2.2 |
| **Description** | Mechanism that allows match players that are searching for a game. That mechanism makes sure to unite players with skills and network condition nears or equals, that do not put them at a disadvantage. | | |
| **Input** | Conditions equality  Set of players | | |
| **Output** | A balanced queue. | | |

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| **Name** | Platform mode | **Number #** | 2 |
| **Description** | Allows players enqueue in matches where their face rivals with the same platform. | | |
| **Input** | Players platform | | |
| **Output** | Special queue where ranking system are included but a only platform is accepted. | | |

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| **Name** | Saint Valentine mode | **Number #** | 3 |
| **Description** | A new mod where players could only use the last weapon that they have raised. | | |
| **Input** | Players weapons.  Weapons ammunition. | | |
| **Output** | Special system that deny change weapon until actual weapon has no ammunition. | | |

No Functional Requirements:

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| **Name** | Average wait time | **Number #** | 1 |
| **Description** | Ranking system won’t increase the average waiting time. | | |
| **Input** |  | | |
| **Output** | An efficient mechanism that provide a rank system without an increase on the waiting time. | | |

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| **Name** | Players ranking update | **Number #** | 2 |
| **Description** | After a match, system should update player’s information based on his/her performance in the match. | | |
| **Input** |  | | |
| **Output** | Players rank constantly updated. | | |