Designing for Balance in a Role-playing Game
Why Balance matters?

Bloodseeker
- Bloodrage heal rescaled from 13/17/21/25% to 10/15/20/25%

Bounty Hunter
- Reworked Scepter. Now applies Jinada to Shuriken Toss, increases cast range to 650 and lowers cooldown to 6
- Shuriken Toss manacost from 135 to 120/125/130/135
- Level 15 Talent changed from +50 Attack Speed to +75 Shuriken Toss Damage
- Level 20 Talent changed from +125 Shuriken Toss Damage to +60 Attack Speed

Brewmaster
- Primal Split Fire breathing damage increased from 80/120/160 to 80/130/180
- Primal Split Fire Permanent Immolation interval changed from 1 to 0.5
- Level 20 Talent increased from +1500 Health to Primal Split Units to +1750
- Level 25 Talent increased from -65s Primal Split Cooldown to -75s

Broodmother
- Level 10 Talent increased from +200 Health to +250

Chaos Knight
- Phantasm cooldown reduced from 145 to 145/135/125
- Reality Rift cast range increased from 475/550/625/700 to 550/600/650/750

Mei
- Endothermic Blaster (Primary Fire)
  - Slowing effect now reduces enemy movement speed from 20-70%, down from 30-90%
  - Slowing effect duration reduced from 1.5 to 1.0 second

Developer Comment: The slowing effect of Mei's primary fire can sometimes feel too difficult to escape. Lowering the amount the duration it lasts for will make it easier to react to. The time required to completely freeze a target remains the same.

D.Va
- Boosters
  - Cool down decreased from 5 to 3 seconds

Developer Comment: The lower cooldown on her mobility will enable D.Va to more readily swap between playing offensively or

Orisa
- Fortify
  - Damage reduction reduced from 50% to 40%


Project Goals

• Build the game software successfully.

• Designing balancing method.

• Reaching equilibrium on significant selection inside the game.
Model Introduction

• RPG maker engine

• Player optimizing their routes forward

• Encourage players to take different strategy

• Balance between significant selections
Game introduction: Interface

Status bar

Play map
Game introduction : Interface

Menu

Details for enemy
Game introduction: Mechanism

**Cost:** Damage and consuming resources

- Formula to calculate damage:
  - Damage Per Round (DPR) : \( M.\text{atk} - P.\text{def} \)
  - Rounds : \( \lfloor \frac{M.\text{hp}}{(P.\text{atk} - M.\text{def})} \rfloor \)
  - Damage = DPR * Rounds

The number on the bottom of the monster.

**Payoff:** Addition to abilities and expendable resources

- Potions, keys, gems.
Game introduction: Mechanism

Selection: Warrior or Magician

Two different style:
   Being more powerful in battle or more skillful on using items while choosing the route forward?

Warrior: Lower cost

Magician: Higher payoff, Better timeliness of the payoff

The point to design and evaluate Balance.
Designing for Balance

• Software development level

• Strategy and method level
Designing for Balance: Software

- Software engineering level: incremental model
  
  Framework + each 5 maps as a stage + skills and items + ...

Balance evaluation and validation on each incremental element.
Designing for Balance : Software

• Flow chart of the game development
Designing for Balance : Strategy

- Collecting volunteers’ data and feedback
- Deciding **dominant route** and **dominated route**.
- Eliminating and improving dominant strategy
- Adjusting and redesigning.
- Reaching equilibrium on significant point
Designing for Balance: Method

- Rebuild the map
  Supporting dominated route, weakening dominating route

- Numerical adjustment

- Remake mechanism and skill
  Enhance rather than impair in principle.

  Most meticulous and difficult part in the design and improvement.
Evaluation and Validation

- Volunteers’ feedback
  - Data
  - Total play time
  - Impression

- Blind test
  - Spend Time
  - Status when finish the game
Evaluation and Validation: statistics

Blind test group statistics

- Clear Time: 45 (Warrior) vs. 90 (Magician)
- Resources: 40 (Warrior) vs. 80 (Magician)
- Satisfaction: 60 (Warrior) vs. 40 (Magician)

Volunteer group statistics

- Clear Time: 20 (Warrior) vs. 50 (Magician)
- Resources: 70 (Warrior) vs. 80 (Magician)
- Satisfaction: 60 (Warrior) vs. 40 (Magician)
Result discussion

• Lower cost could be more intuitive while planning route forward, shorter average clear time shows being a stronger character is much easier than being a more skillful character.

• Both routes have had clear record after all, thought sample size might be insufficient.

• Considering the clear status and difficulty for both routes, an acceptable balance or harmony could have been reached without extremely unbalanced feedback and data.
Further research

• **Avoid** homogenization.

• Larger game scale.

• Discover potential mathematical relationship between different routes, formulation.
Related Research

• Five Models of Players' Rule Behavior for Game Balance (Kim and Song, 2019)
Thank you

Q&A