

ONESTAT

Team 10: Zach Fulton, Nolan McDermott, Talon Smith

There are too many stats...

Traditional Stats:

For Hitters:

- Games (G)
- Plate Appearances (PA)
- At Bats (AB)
- Runs (R)
- Hits (H)
- Singles (1B)
- Doubles (2B)
- Triples (3B)
- Home Runs (HR)
- Runs Batted In (RBI)
- Stolen Bases (SB)
- Caught Stealing (CS)
- Walks (BB for Base on Balls)
- Hit by Pitch (HBP)
- Strikeouts (SO)
- Batting Average (AVG)
- On Base Percentage (OBP)
- Slugging Percentage (SLG)
- On Base + Slugging (OPS)
- Total Bases (TB)
- Ground into double play (GPD)
- Sacrifice Hits (SH)
- Sacrifice Flies (SF)
- Intentional Walks (IBB)

Traditional Stats:

For Pitchers:

- Games (G)
- Games Started (GS)
- Games Finished (GF)
- Wins (W)
- Loses (L)
- Complete Games (CG)
- Shutouts (SHO)
- Saves (SV)
- Holds (HD)
- Innings Pitched (IP)
- Strikeouts (K)
- Earned Runs allowed (ER)
- Earned Runs average (ERA)
- Unearned runs (UER)
- Balks (BK)
- Wild Pitches (WP)
- Batters Faced (BF)
- Fielding Independent Pitching (FIP)
- Walks + Hits over innings pitched (WHIP)
- Hits per 9 (H9)
- Walks per 9 (BB9)
- Home Runs per 9 (HR9)
- Strikeouts per 9 (K9)

Advanced Stats:

For Hitters:

- Walk Percentage (BB%)
- Strikeout percentage (K%)
- Walks to strikeout ratio (BB/K)
- Isolated Power (ISO)
- Speed rating (Spd)
- Batting average on balls in play (BABIP)
- Ultimate Base Running (UBR)
- Weighted GDP (wGDP)
- Weighted Stolen Base (wSB)
- Weighted Runs Created (wRC)
- Weighted Runs Above Average (wRAA)
- Weighted On Base Average (wOBA)
- Weighted Runs Created Plus (wRC+)
- Ground Ball Percentage (GB%)
- Pull Percentage (Pull%)
- Hard Hit Percentage (Hard%)
- Expected wOBA (xwOBA)
- League and park adjusted OPS (OPS+)

WAR and xwOBA/OAA

- Wins Above Replacement
 - Each website has their own version
 - Extremely complicated formulas
- Assess Total Player Value into one number
 - Only one problem, each website has their own version...
- [Baseball-Reference.com](https://baseball-reference.com) WAR
 - bWAR or also called rWAR
- [Fangraphs.com](https://fangraphs.com) WAR
 - fWAR
- [BaseballSavant.mlb.com](https://baseballsavant.mlb.com) xwOBA/OAA
 - Expected Weighted On Base Average (based on exit velocity) and Outs Above Average
- Other exist like Baseball prospectus VORP
 - Much less used and accessible.



OneStat Concept

- Baseball has too many websites and statistics to evaluate players
 - Fangraphs
 - Baseball Reference
 - Baseball prospectus
 - Baseball Savant
- OneStat will combine the information from all of these websites
 - Define Statistics
 - Create Custom Leaderboards
 - Simple Player Comparison
- Provide a Platform for WARLeagues
 - Fantasy Baseball based on WAR



Key Functional Requirements

- Player Comparisons
 - User can compare the stats of 2 players
 - Helps users distinguish between players performance on the field.
- Leaderboard Display
 - User can view the leaders of the default stats
 - Shows the best players in each category so they do not have to individually compare all players.
- Custom Leaderboard Creation
 - User can create a leaderboard with specific statistics
 - So users can prioritize the most important stats and categories they want in a player.

Player Comparison Mockup

Enter Player 1:

Amed Rosario



Amed Rosario
SS
LHH
25

Choose Season:

2019

121st

2.4

2.7

33%

3%

OneStat

rWAR

fWAR

xwOBA

OAA

Name
Position
Handiness
Age

23rd

5.0

4.5

51%

99%

Enter Player 2:

Francisco Lindor



Francisco Lindor
SS
SH
27

Key Functional Requirements

- **Statistic Dictionary**
 - User wants to see definitions and explanations of statistics.
 - Advanced stats are too complicated for the average person to understand. This helps the user gain knowledge about baseball and how players performance is measured.
- **WARLeague**
 - User wants to create a fantasy WARLeague
 - Includes: Drafting Assistance, League Creation, League Maintenance, Auto-Drafting
 - Different than a traditional fantasy league, in the sense it is easier to manage without a constantly changing lineup.
 - Also grades players more accurately unlike some traditional stats like Wins
- **User System**
 - User creates a username and password for the software. After the initial account creation, user logs in by matching username and password to existing account.
 - This allows users to access the site with their data and saved preferences from many devices.

Stats Dictionary Mockup

wRC+

Name: Weighted Runs Created Plus

Scale: 100 is average

150 is 50% above average

50 is 50% below average

Last Year's Leader:

Juan Soto - 212 (112% above average)

Example: All Soto's 2020 Home Runs



Our take: wRC+ is a great and easy to understand stat for rating offensive performances. Similar to OPS+ but used wOBA so it better represents walks vs singles.

O-Swing%

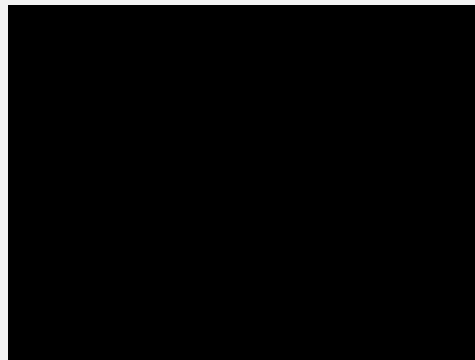
Name: O Swing Percentage

Formula: Swings at balls over total balls taken

Last Year's Leader:

Cavan Biggio - 16.3%

Example: Biggio takes a close ball on a 3-2 count with the bases loaded.

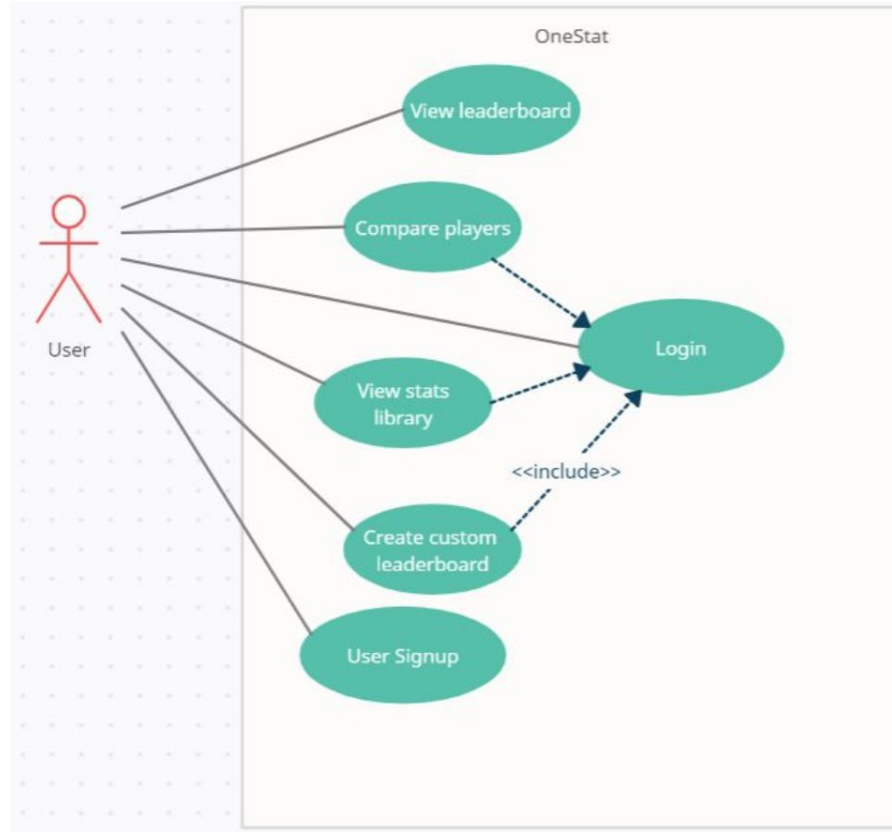


Our take: O-Swing can tell you who has a great eye and plate discipline. The lower O-Swing the better the batter is at identifying which pitches are gonna be balls and can lead to more walks. League Average in 2020 was 30.6%

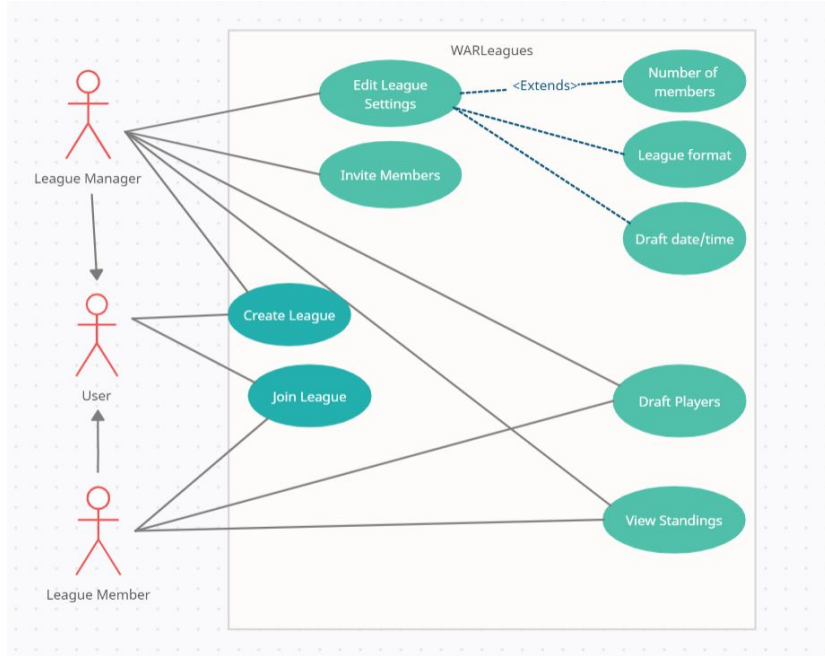
Key Non-Functional Requirements

- Fast Player Comparisons
 - When the player comparison feature is used, it returns the results in under a minute
 - This can be done with a combination of consistent, automatic API calls and running a server side database with popular statistics from previous years
- Up-to-date Standings
 - The WARLeague standings are updated to reflect the most recent in game results
- Information encryption
 - The user's information (Username, Password) is store under encryption to ensure safekeeping
- Visually Pleasing Leaderboards
 - Leaderboards should have clear and consistent formatting
 - It is important for product cohesion that OneStat leaderboards and WARLeague systems have similar display systems

OneStat Use Case

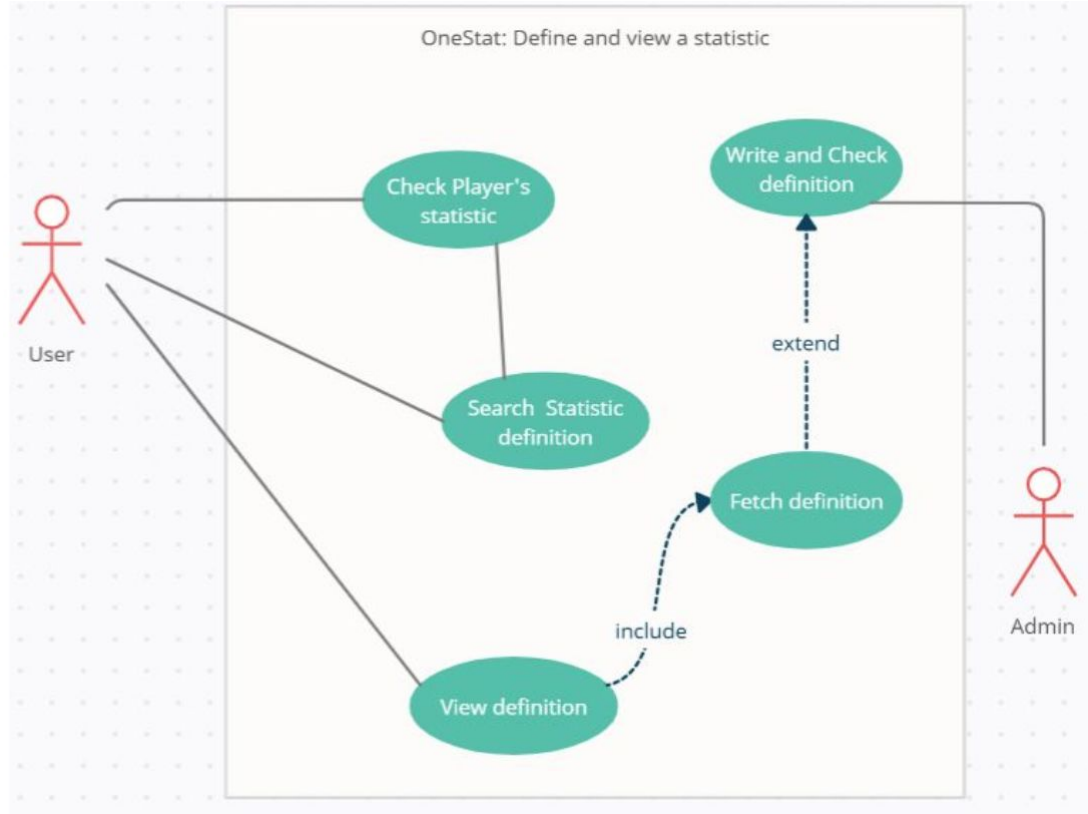


WARLeagues Use Case



User Specialization

Statistic Dictionary Use Case



System Constraints

- Tools:
 - Creately is used for making use case diagrams.
- Language:
 - The core function of the program is written in python for easy updating, readability, and functionality.
 - In order to get our data set, we will use a few systems:
 - Python packages for Baseball Reference
 - Build packages for Fangraphs and Baseball Savant in python or C
 - Access Yahoo Fantasy using php
 - For our database, we will use DBaaS from AWS and SQL to access and manipulate the database
- Platforms:
 - iOS, Android, Desktop (Web Based)
- Hardware:
 - 2GB of RAM, Intel Pentium 4 processor or comparable

System Constraints

- Network
 - Uses UMiami Network for better control
- Deployment
 - All versions will be released simultaneously
- Support
 - Donations, PayPal integration

Budget and Schedule

- 500 Hour Maximum
 - The project must be completed in under 500 hours of work. (we got lives you know)
- \$20,000 Budget
 - Project must be completed for under \$20,000 (we are a broke college start-up)
- May 9th Deadline
 - Project must be completed by May 9th (I want to actually enjoy my summer)

THANK YOU

- ONESTAT TEAM