Roblox UFM Match Engine

Roblox Ultimate Football Manager's Match Engine is a football simulation system designed with the intent of creating a match simulator that feels **real**, **engaging**, **tactically masterable**, but also highly **pressuring** of players to upgrade their team.

Players will enter **tournaments** against AI opponents, play between **3 to 4 games**, and in **each game**, will watch a **commentary-only match** unfold in 90 minutes (each minute is a second, additional time random) in a match decided by **players**, **tactics** and **facilities**.

The engine is divided into two sections:

1. **Determining** the **results** of games

2. **Generating a believable football game** that reaches that outcome

This system is heavily inspired by real life football betting models, which are designed to predict reality and earn a profit against other prediction models in the market, using a Predicted Goals generation system and assigning value via Poisson Goal Distribution.

I. Generating Outcome

Team Quality



The most important aspect in deciding any game's result will be the team's quality. Each team will be assigned an **attacking value** and a **defensive value**, and those two values will be used to determine how many goals a team is expected to score.

Attacking & Defensive Scores will be determined by two factors: **players** and **formation**.

Attacking Score is calculated by gathering the mean average of:

1. **LW's** value (coeff. 2)
2. **All ST's** value (coeff. 2)
3. **RW's** value (coeff. 2)
4. **All AM's** value (coeff. 1)
5. **LM's** value (coeff. 1)
6. **RM's** value (coeff. 1)
7. Highest rated **LWB, RWB, LB** or **RB** (coeff. 1)
8. Highest rated **CM** or **DM's** value (coeff. 1)

Meanwhile, **Defensive Score** is calculated by gathering the mean average of:

1. **All CB**'s value (coeff. 3)
2. Highest rated **LWB**, **RWB**, **LB**, **RB**, **LM** or **RM's** value (coeff. 2)
3. Lowest rated **LWB**, **RWB**, **LB**, **RB**, **LM** or **RM's** value (coeff. 1)
4. Highest rated **CM's** value (coeff. 1)
5. **All DM's** value (coeff. 1)

Then, both scores are backed by **formation value**:

1. **+1.8 ATT:** 433, 4231, 41212, 4141, 3241
2. **+0.8 DEF, +0.8 ATT:** 523, 5140, 343
3. **+1.8 DEF:** 442, 352, 532, 541

Predicted Goals

Once both teams are assigned a score, they are then assigned **predicted goals**. This is the **expected amount of goals** from each team in the game, and will be used to calculate **how many goals the team will score**. The formula is relatively simple, scaling towards something like this:

Attacking Edge	Predicted Goals
-40	≈ 0.03
-20	≈ 0.12
-10	≈ 0.25
-5	≈ 0.35
0	≈ 0.65
+5	≈ 1.25
+10	≈ 1.80
+20	≈ 2.80
+40	≈ 4.75

Goal predictions are **clamped** between 0.10 and 4.75.

These numbers are **NOT perfectly realistic**. However, it **rewards** teams with **stronger attacks**, and frustrates those with **weaker defenses**, and also encourages **tactical advantage**. A huge part of the game is **progression difficulty**, and a stubborn match engine will embody that.

Tactical Battle



Once predicted goals are laid down, a **tactical calculation** is added to give a couple Predicted Goal points, made using the 3 tactical settings.

The term "**high**" refers to a position on the scale **above 75%**, and "**low**" refers to a position on the scale **below 25%**, and "**standard**" refers to everything in between.

Only ONE tactical battle can take place per match. Tactical Battles are designed to operate in a rock-paper-scissors pattern, with the following priority order taking place:

1. Low Press + High Tempo beats High Press + Standard/High Tempo **(+0.25 PG / -0.40 PG)**
   Explanation: Gegenpressing struggles to break down counter attacking teams, and can occasionally be left helpless against their stubbornness.

2. High Press + High Tempo beats Standard/High Press + Any Tempo **(+0.35 PG / -0.15 PG)**
   Explanation: Gegenpressing beats possession and control based tactics, and remains the most effective tactic outside of counter attacking collapses.

3. Standard/High Press + Any Tempo beats Standard Press + Standard/Low Tempo **(+0.30 PG / -0.15 PG)**
   Explanation: Possession/control-based teams are patient and will know how to beat less ambitious counter attacking teams

4. High Press + Any Tempo beats Low Press + Low Tempo **(+0.35 PG / -0.15 PG)**
   Explanation: Aggressive pressing irritates teams that park the bus

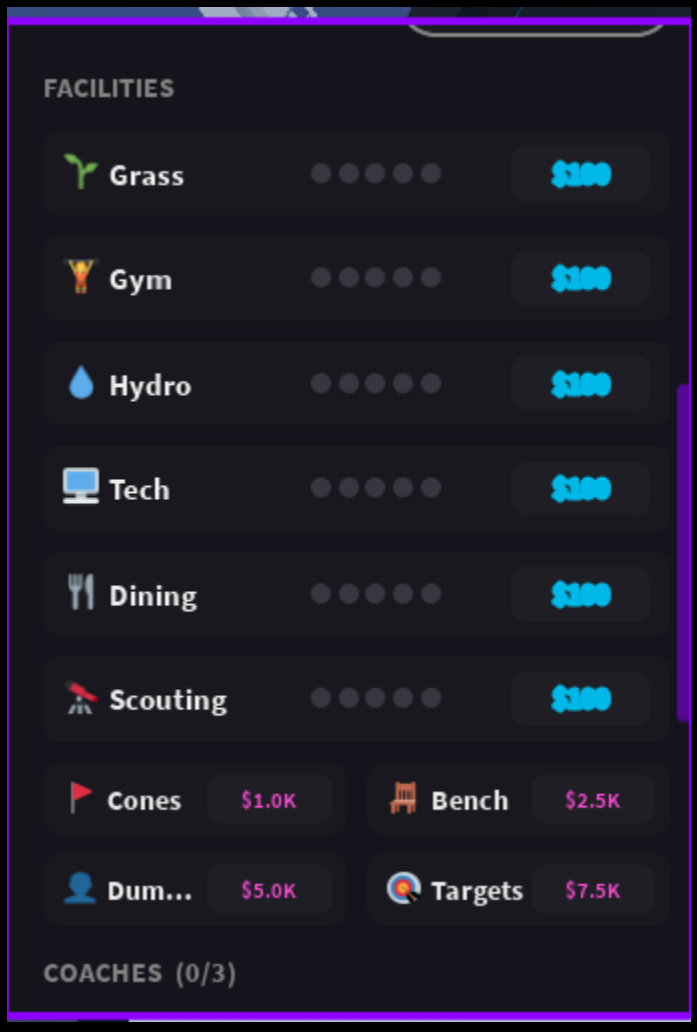
5. Low Press + Low Tempo beats any other structure **(+0.10 PG / -0.45 PG)**
   Explanation: Park the Bus teams are outdated, however, teams that can survive without being pressed emerge victorious

Time Wasting is unique in the sense that it has a bonus calculation. The "**Time Wasting**" setting **halves the enabling team's predicted goals**, but **removes 0.35 from the opposition's**, and increases **Red Card Risk** from 2% to 5%.

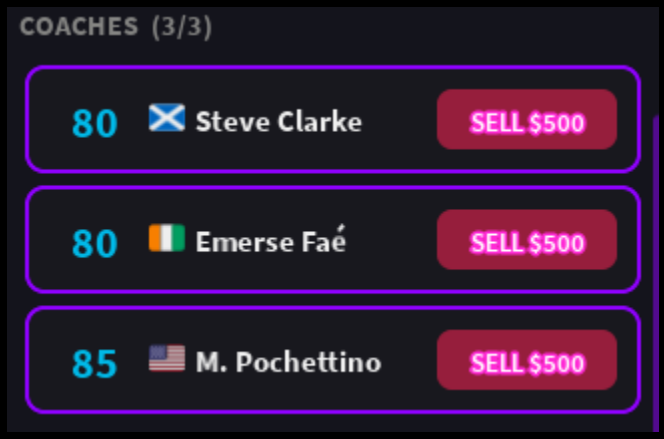
Additionally, upon achieving a tactical victory, a **Tactical Masterclass** has a 2% chance of happening. What this does is it gives the winning team 0.5 predicted goals, and removes 0.5 from the losing team's.

Facilities & Coaching

A **facilities and coaching bonus** is applied to the team's predicted goals. This only applies to **human** players, and AI cannot benefit from this.



- For every tier in **Gym** and **Tech**, the team earns +0.01 PG.
- For every tier in **Grass**, **Hydro**, and **Dining**, the team earns +0.005 PG.
- For unlocking one of each of **Cones**, **Dummies**, **Bench** and **Targets**, the team earns +0.01 PG.



As for **coaches**, 0.1% of each coach's rating is added to the team's PG.

Red Card Bonus

Before the scoreline is finalized, each team rolls for possible **Red Cards**.

The chances are:
- Normal team: 2%
- Time-wasting team: 5%

And if a red card happens:
- Pick a non-GK player.
- Pick a minute between 20 and 85.
- Damage that team's PG by a number defined by a formula below
- Give the opponent a smaller PG boost defined y a formula below

Additionally, **commentary lines** will indicate that the match is heating up and that things are getting more physical once a red card or a set amount of yellow card is handed out.

The formula used for calculating Predicted Goal damage:

- Remaining Ratio = (90 - Minute of Red Card)/90
- Team PG Loss = 0.15 + (0.65 x Remaining Ratio)
- Team PG Gain = 0.04 x Remaining Ratio

The wisdom behind this is that teams after a red card **do not necessarily defensively collapse**, but **rather take up a new shape and start fighting more aggressively for the ball**, and that the shortcomings are more visible in attack than elsewhere.

Poisson Goal Distribution

With the two team's **Predicted Goals established**, a **Poisson Goal Distribution** is wired in and used to generate a result for both teams.

For example:

Team A's Predicted Goals are 1.8, then:

1. 0 Goals = 16%
2. 1 Goal = 30%
3. 2 Goals = 27%
4. 3 Goals = 16%
5. 4 Goals = 8%
6. 5+ Goals = Remaining Probability

Repeat for both teams, and this generates the **final score**. Using a **Poisson Goal Distribution** creates realistic football scorelines while still allowing surprises.

II. Generating Match

Once the score has been generated, **we will determine what type of match produced it**. The match generation pipeline looks something like this:

1. Read the **Final Score**
2. Read **PG**, **tactics**, **tempo**, **pressing**, **time wasting**, **red cards** and **formation**.
3. Select a game **archetype**.
4. Generate goal **minutes** and goal **types**.
5. Pick **scorers** and **assists**.
6. Generate evolutionary + final **stats**.
7. Create a **live commentary timeline**.
8. Add **extra time** or **penalties** if needed.

Narrative Generation

An archetype is the structure for a match, some possible **archetypes** are:

- Balanced Game
- Controlled Domination
- Tactical Stalemate

- Counter Masterclass
- End-to-End Football
- Smash and Grab
- Pressing Clinic
- Cagey Affair

This will be reflected via **flavor commentary**, **goal times**, and **stats**.

To decide the archetype, we use two different factors: **Scoring** and assigning **Random Values**

The archetype is selected by looking at:

- Final Score
- Goal Expectation
- Tactical Advantage
- Tempo
- Pressing
- Time Wasting

Event	**Random Value**
Goal Difference = 0	Balanced Game **+5**, Tactical Stalemate **+3**, Cagey Affair **+2**, Controlled Domination **-3**, Counter Masterclass **-2**, Smash & Grab **-4**
Goal Difference = 1	Balanced Game +3, Tactical Stalemate +2, Counter Masterclass +2, End-to-End Football +2, Smash & Grab +3, Pressing Clinic +1, Cagey Affair +2
Goal Difference = 2 or 3	Controlled Domination +5, End-to-End Football +3, Pressing Clinic +2, Counter Masterclass +1, Balanced Game -2, Tactical Stalemate -3, Cagey Affair -2
Goal Difference > 3	Controlled Domination +8, Pressing Clinic +3, End-to-End Football +2, Balanced Game -5, Tactical Stalemate -5, Cagey Affair -4, Counter Masterclass -2, Smash & Grab -2
Total Goals ≥ 5	End-to-End Football +8, Controlled Domination +2, Counter Masterclass +2, Pressing Clinic +2, Smash & Grab +1, Balanced Game -3, Tactical Stalemate -6, Cagey Affair -6
Total Goals ≤ 2	Cagey Affair +5, Tactical Stalemate +4, Balanced

	Game +1, Counter Masterclass +1, Smash & Grab +1, Controlled Domination -2, End-to-End Football -5, Pressing Clinic -1
Tactical Winner Exists	Counter Masterclass +5, Pressing Clinic +4, Controlled Domination +1, Balanced Game +1, Smash & Grab +1
Tactical Masterclass	Counter Masterclass +8, Pressing Clinic +7, Controlled Domination +3
Both Teams Tempo ≥ 75	End-to-End Football +6, Controlled Domination +2, Counter Masterclass +2, Pressing Clinic +2, Balanced Game +1, Tactical Stalemate -3, Cagey Affair -5
Both Teams Tempo ≤ 25	Cagey Affair +5, Tactical Stalemate +3, Balanced Game -1, Controlled Domination -1, End-to-End Football -5, Pressing Clinic -2
Either Team Uses Time Wasting	Cagey Affair +4, Tactical Stalemate +2, Smash & Grab +2, Counter Masterclass +1, Balanced Game -1, End-to-End Football -3, Pressing Clinic -2
Went to Penalties	Smash & Grab +1, Tactical Stalemate +1, Cagey Affair +1, Controlled Domination -2

After scoring all archetypes, we:

1. Sort by score descending,
2. Let first = highest score, second = second highest score

Selection:

- gap >= 5: choose first 100%
- gap == 4: first 90%, second 10%
- gap == 3: first 85%, second 15%
- gap == 2: first 75%, second 25%
- gap == 1: first 60%, second 40%
- gap == 0: first 50%, second 50%

If third place is also within 1 point of first, we also use weighted random:
weight = max(1, score - lowestCandidateScore + 1)

Then pick from all candidates within 2 points.

Additionally, we will generate stats for **Possession**, **Shots**, **Shots on Target** and **xG**. Statistics should fit the **narrative** more than they fit the score, although clashes are less than likely. Statistics will dynamically evolve across the full course of the match.

Goals Generation

With every goal generated, four variables must come in place:

- Goalscorers
- Assist providers (sometimes none)
- Goal minutes
- Goal type

To determine the minute, we roll the dice for every goal, with multipliers applied, then pick a random minute within the winning category, then a multiplier is added for archetype fit.

Phase	Weight
1-15	18
16-30	22
31-45+	18
46-60	17
61-75	13
76-90+	12

A multiplier is then added, based on Archetype:

Archetype	1-15	16-30	31-45+	45-60	61-75	76-90+
Balanced Game	1.00x	1.00x	1.20x	1.20x	1.00x	1.00x
Controlled Domination	1.40x	1.35x	1.15x	0.95x	0.85x	0.70x
Tactical Stalemate	0.60x	0.75x	0.90x	1.10x	1.30x	1.55x
Counter Masterclass	0.80x	0.95x	1.10x	1.35x	1.30x	0.90x
End-to-End Football	1.10x	1.05x	0.95x	1.00x	0.95x	1.10x
Smash and Grab	0.45x	0.60x	0.80x	1.00x	1.40x	2.25x

Pressing Clinic	1.50x	1.35x	1.10x	0.90x	0.75x	0.60x
Cagey Affair	0.50x	0.70x	0.90x	1.10x	1.35x	1.80x

Then, a final check for multipliers is added based on modifiers:

Modifier	Timing Effect
Red Card	Opponent goal timing: 1-15- 2.00x 16-30- 1.75x 31-45+- 1.50x 46-60- 1.35x 61-75- 1.20x 76-90+- 1.05x
Time Wasting	Both teams: 1-60- 0.65x 76-90+- 1.30x
Very High Tempo	1-30- 1.25x 61-90+- 0.90x
Very Low Tempo	1-45- 0.80x 76-90- 1.30x

When goals are rolled for **extra time**, they are scaled to the **90 minute clock**, and locked to allow one goal per minute.

Goal types are almost fully random, with the exception of set pieces being linked to time wasting. Goal types include:

- Open Play
- Counter Attack
- Corner (2x more weighted with Time Wasting setting on, for both sides)
- Free Kick (2x more weighted with Time Wasting setting on, for both sides)
- Penalty (2x more weighted with Time Wasting setting on, for both sides)
- Long Shot
- Header

- Individual Error
- Bicycle Kick (0.25% Chance, dice is rolled after goal type is decided)

Match Commentary

As soon as the match starts, it has already been mathematically decided. The purpose of the live match is to tell the story of how that result happened. The player should feel like they are watching a real football match unfold, with atmosphere, story, engagement and world.

A separate documentation contains commentary goals.

III. Extra Time

In some instances, games might end as draws. This leads to the start of a 30 minute extra time. Matches are generated once more in this instance, but Predicted Goals are divided by 5 for both sides. If a winner has not been decided by the 120th minute, they are then taken to penalties.

In penalties, players are listed in order of formation position, starting from last and ending with first (always the goalkeeper). 5 penalties each, with the game ending if one team has no possibility of coming back mathematically, then followed by sudden death if still tied.