

Beta 1 Blueprint

1. Core Concept & Domain Model

1.1 App Mission Statement

- Predict a user's **true long-term bench press 1RM** using:
 - logged sets (weight, reps, RIR)
 - occasional tested true 1RMs
 - user data (bodyweight, age, gender)
 - Track strength trend over 90 days.
 - Show strength level relative to bodyweight.
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1.2 Core Entities (Plain English)

- **User**
 - age
 - gender
 - bodyweight
- **Bench Set**
 - date/time
 - weight
 - reps
 - RIR
- **Tested 1RM**
 - date/time
 - weight

- **1RM Estimate**
 - estimated baseline 1RM
 - uncertainty range
 - confidence level
 - **Strength Category**
 - calculated from 1RM-to-bodyweight ratio
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1.3 Vocabulary Contract

- **RIR:** Reps In Reserve (integer)
 - **True 1RM:** Actually tested max
 - **Baseline 1RM:** Smoothed long-term estimate
 - **Estimate:** Model output (not tested)
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2. Screens & UX Flows

2.1 Screen List (Beta 1)

- Onboarding / Profile Setup
 - Home / Dashboard
 - Log Bench Session
 - 1RM History / Graph
 - Settings (minimal)
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2.2 Onboarding Flow (Text)

1. Welcome / Overview
 2. Collect age, gender, bodyweight
 3. Optional: enter known 1RM
 4. Go to Home
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2.3 Logging Flow

Actions:

- Log sets in real-time OR post-workout
- For each set:
 - weight
 - reps
 - RIR

End-of-session:

- (Optional automatic behavior) recompute estimated 1RM
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2.4 Dashboard Definition

- Current baseline 1RM: value + uncertainty
 - Strength category (relative to BW)
 - Last tested 1RM (if any)
 - Context text ("Based on your last X sets...")
 - Buttons:
 - Log Bench Sets
 - View History
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2.5 1RM History / Graph Definition

- 90-day graph of baseline 1RM
- Points for tested 1RMs
- Highlight today's estimate
- Optional stats:
 - Best 1RM in last 90 days
 - Change in last 30 days

3. Data Structures & Storage (Conceptual)

3.1 User Profile Schema

- age
 - gender
 - bodyweight
 - optional: dateCreated, lastUpdated
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3.2 Bench Set Schema

- id
 - date/time
 - weight
 - reps
 - RIR
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3.3 Tested 1RM Schema

- id
 - date/time
 - weight
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3.4 1RM Estimate Record Schema

- id
 - date
 - estimated 1RM
 - uncertainty range
 - confidence level
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3.5 Storage Strategy

- Everything stored **locally** in Beta 1
 - Three main collections:
 - `profile`
 - `benchSets`
 - `testedOneRMs`
 - Optional: computed `estimates`
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4. Algorithm v1 (Conceptual Only)

4.1 Inputs to the Estimator

- Bench sets from last 90 days
 - Tested 1RM values
 - User bodyweight, age, gender
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4.2 High-Level Estimation Flow

1. Pull bench sets from last 90 days
 2. Convert each set into an estimated 1RM (simple RIR+reps formula)
 3. Weight recent 60 days more heavily
 4. If tested 1RM exists:
 - Perform a **hard reset** around that value
 5. Produce:
 - baseline 1RM
 - uncertainty
 - confidence
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4.3 Personalization Logic

- Before first tested 1RM:
 - use generic rep/RIR → 1RM formula
 - After first tested 1RM:
 - create a personal calibration factor
 - mild personalization only
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4.4 Strength Category Logic

- Use 1RM-to-bodyweight ratio
 - Map ratio to category table:
 - novice
 - intermediate
 - advanced
 - elite
 - Gender-specific ranges
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5. App Architecture (Conceptual)

5.1 Core Modules

- **Profile Module**
 - **Logging Module**
 - **Estimation Module**
 - **History Module**
 - **Storage Module**
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5.2 Data Flow (Text Diagram)

- User logs sets → Logging Module → Storage
- Dashboard requests baseline → Estimation Module → Storage

- History screen pulls past sets / estimates → Estimation Module
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6. Validation & Testing Plan

6.1 Test Group

- Yourself + 3–5 athletes / training partners
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6.2 Validation Procedure

1. Have testers log sets consistently
 2. Collect tested 1RMs
 3. Compare estimated vs actual
 4. Track average error and accuracy window ($\pm 5\%$ or $\pm X \text{ kg}$)
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7. Future Extensions (Notes Only)

7.1 Multi-Lift Support

- Add squat / deadlift
 - Add `liftType` property to sets and tests
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7.2 Multi-User / Coach Mode

- Replace single profile with multiple athlete profiles
 - Each athlete has separate sets/tests/estimates
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7.3 Cloud Sync

- User accounts
- Online database
- Cross-device sync