

# Beta 1 Blueprint

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## 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



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## **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  $\pm X$  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