

CaBE Arena Beachhead MVP — Project Scope & Build Document

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Owner: Product & Platform Architecture Team

Reviewers: CTO, Engineering Lead, Product Manager

Abstract: Comprehensive developer-ready build document for CaBE Arena's Beachhead MVP, focusing on the core skill-proving engine through curated task completion, automated scoring, and rank progression across AI/ML, Cloud/DevOps, Data Science, and Full-Stack Development domains.

Executive Summary

What is CaBE Arena?

CaBE Arena is a career-building platform that replaces resumes and degrees with **proof of actual work**. Users complete skill-based micro-tasks, submit proof of their work, earn points automatically, and progress through ranks to unlock opportunities.

The Problem We're Solving

- Students and career-switchers can't prove their skills without prior experience
- Employers can't trust resumes or portfolios without some form of verification
- Traditional career-building paths are slow, gatekept, and heavily reliant on personal connections
- The college-degree-based career path is increasingly outdated and irrelevant in today's fast-changing, skills-driven world
- More and more employers are ditching degree requirements in favour of hiring based on concrete skills: globally, 81% of employers now use some form of skills-based hiring, up from 56% in 2022 ^[1]
- In India, roughly 80% of employers prioritize practical skills over formal degrees ^[2]

How CaBE Arena Works

1. **Discover** curated tasks (AI/ML, Cloud/DevOps, Data Science, Full-Stack Development)
2. **Complete** real work and submit proof (screenshots, files, links)
3. **Get scored** automatically using our transparent points formula
4. **Progress** through ranks (Bronze → Silver → Gold → Platinum)
5. **Unlock** access to internships, gigs, and premium features

Target Users

- **Primary:** Students at Tier 2/3 colleges seeking experience
- **Secondary:** Career switchers and new freelancers wanting credible skill proof
- **Tertiary:** Existing freelancers seeking reputation building

Key MVP Features

1. **Task Feed** - Curated micro-tasks across 4 skill areas
2. **Proof Submission** - Upload system with confirmation checkboxes
3. **Auto-Scoring** - Points calculated using transparent formula
4. **Rank Progress** - Visual progression with unlock previews
5. **Profile Dashboard** - Points, rank, and progress tracking
6. **Simulated Oversight** - Fake moderation messages to build trust
7. **Admin Panel** - Task management and basic analytics

Top Success Metrics

- **Task Completion Rate:** >60% of users who start a task submit proof
- **Retention:** >40% of users complete multiple tasks within first week
- **Daily Active Users:** Steady growth with 3-day average session frequency
- **Time to Silver Rank:** 2-4 days of moderate effort (target: 3-5 completed tasks)

Purpose & Beachhead Rationale

The "Engine Not a Trimmed-Down App" Thesis

To validate the **central loop** of CaBE — *effort* → *proof* → *scoring* → *rank progression* — without building the full platform (gigs, internships, profiles, integrations). This lean MVP simulates the value of the full ecosystem using only the most essential components.

It gives users a **real sense of progress, motivation, and recognition** for their work — while collecting real data to guide future expansion.

We're not launching a trimmed-down version of CaBE. We're launching its **engine**.

Why These Features Were Chosen

1. Curated Task Feed (Arena)

- ✓ Simulates real-world freelance or project work in micro-form
- ✓ Controlled and scalable — we define difficulty, categories, and quality
- ✓ Keeps things focused: only high-signal task types across 4 key skills

Why it matters: No user-generated junk, no moderation burden — but still feels real.

2. Submission System + Proof Requirement

- ✓ Enforces skin-in-the-game
- ✓ Users must actually do something, not just click buttons
- ✓ Adds credibility to every point earned

Why it matters: Builds trust in rankings and user reputation from day one.

3. Automated Scoring Engine

- ✓ Uses CaBE's formula (v5) to assign points fairly across task types
- ✓ Zero human review needed
- ✓ Adjusts based on task metadata + basic NLP

Why it matters: This is the backbone of the entire platform — fairness, transparency, and scale.

4. Rank Progression System

- ✓ Replaces degrees, CVs, and arbitrary filters with visible, earned credibility
- ✓ Powers unlocks, CaBOT access, task tiers
- ✓ Drives retention via milestone addiction

Why it matters: Progression = motivation. This is how we get them to keep coming back.

5. Simulated Oversight + Psychological Triggers

- ✓ Shows "task under review" and "suspicious activity" messages without real moderation logic
- ✓ Triggers fear of being caught + reward for being "verified"
- ✓ Makes the system feel alive and trustworthy

Why it matters: Fake checks still influence real behavior — lets us build trust without building ops.

6. Perceived Unlocks (Locked Tabs + Leaderboard)

- ✓ Gig and Internship boards are **shown but gated** behind ranks
- ✓ Creates tension: "You're close, just 300 points more"
- ✓ Makes the MVP feel like the tip of something much bigger

Why it matters: Teases the full vision. Increases user hunger and retention.

Validation Loop and What "Success" Looks Like

Primary Goal: Validate the core user loop: **Discover Task** → **Submit Proof** → **Get Scored** → **Earn Rank** → **Return for More**

Success Validation Criteria:

- Users find tasks engaging enough to complete (>60% completion rate)
- Automated scoring feels fair and motivating (low complaint rate)
- Rank progression drives retention (>40% multi-task completion)
- System scales without manual moderation (fully automated)

Core MVP Features (Detailed)

2.1 Task Feed (Arena)

Purpose: Central hub where users discover and start skill-based micro-tasks

Structure:

- **4 Skill Categories:** AI / Machine Learning, Cloud Computing & DevOps, Data Science & Analytics, Full-Stack Software Development
- **150+ Curated Tasks** at launch (no user-generated content)
- **Weekly Refresh:** 10 new tasks added every Monday via admin panel

Task Card Details:

```
[TASK CARD LAYOUT]
Title: "Build a Simple Image Classifier"
Category: □ AI / Machine Learning
Difficulty: ★★ Medium
Time: ~45 minutes
Points: Up to 420 pts
Tags: #neural-networks #tensorflow #beginner-friendly
[Start Task Button]
```

Task Examples:

- **AI / Machine Learning:** "Build and tune a simple neural network to classify images"
- **Cloud Computing & DevOps:** "Deploy a containerized microservice to a managed Kubernetes cluster"
- **Data Science & Analytics:** "Analyze a public dataset and present 3 insights in a dashboard"
- **Full-Stack Software Development:** "Fix an API endpoint and push to GitHub with tests"

Filtering & Display:

- Filter by skill category (tabs or dropdown)
- Sort by difficulty, points, or newest
- Search by keywords/tags
- Responsive grid layout (3 cards per row desktop, 1 per row mobile)

2.2 Proof Submission System

Purpose: Collect verifiable evidence that users completed the work

Submission Flow:

1. User clicks "Start Task" → Task details expand
2. Upload proof via:
 - **File Upload:** Images, PDFs, documents (max 10MB)
 - **External Links:** GitHub repos, Colab notebooks, Figma files, Google Drive
 - **Text Box:** For written work or descriptions
3. **Confirmation Checkbox:** "This is my original work. I understand false submissions may be flagged."
4. **Submit Button** → Shows loading spinner + "Task under review..." message

Proof Requirements by Category:

- **AI / Machine Learning:** Code notebooks, model files, GitHub links, or demo screenshots
- **Cloud Computing & DevOps:** Infrastructure screenshots, deployment URLs, config files, or terminal outputs
- **Data Science & Analytics:** Jupyter notebooks, dashboard links, CSV files, or visualization screenshots
- **Full-Stack Software Development:** Code repositories, deployed app links, screenshots, or demo videos

Psychological Deterrents:

- Warning text: "Suspicious submissions may trigger manual review"
- Random "under review" messages for 10-20% of submissions
- Fake "verification badges" for quality submissions

2.3 Automated Scoring Engine (CaBE Formula v5)

Purpose: Calculate fair points based on task effort, skill, and complexity

Formula in Simple Terms:

Final Score = Base Points + Bonus Points + Review Strength

Bonus Points = Max Bonus × (Weighted Score Average) + Random Factor

Weighted Factors (0-10 scale):

- Duration: How long task typically takes
- Skill: Expertise level required
- Complexity: Mental effort needed
- Visibility: How public/shareable the work is
- Impact: Career-building value
- Autonomy: How independently work is done

Example Calculation:

Task: "Deploy Microservice to K8s"

Base Points: 300

Max Bonus: 150

Factor Scores:

Duration: 8 (60 min) × Weight 3 = 24

Skill: 7 (advanced) × Weight 4 = 28

Complexity: 8 (high technical) × Weight 3 = 24

Visibility: 9 (public repo) × Weight 2 = 18

Impact: 8 (strong portfolio) × Weight 3 = 24

Autonomy: 9 (independent) × Weight 1 = 9

Weighted Average: $(24+28+24+18+24+9) \div 16 = 7.9$

Bonus: $150 \times 7.9/10 = 119$ points

Random Factor: +25 points

Final Score: $300 + 119 + 25 = 444$ points

Implementation Notes:

- Each task has preset factor scores in database
- Calculation happens instantly on submission
- Points rounded to nearest 5 for cleaner UX
- Score breakdown shown to user for transparency

2.4 Rank Progression System

Rank Thresholds:

- **Bronze:** 0-999 points (starting rank)
- **Silver:** 1,000-4,999 points
- **Gold:** 5,000-9,999 points
- **Platinum:** 10,000+ points

Unlocks by Rank:

- **Bronze:** Basic tasks, leaderboard viewing
- **Silver:** Medium tasks, internship board preview, CaBOT suggestions

- **Gold:** Hard tasks, gig board preview, priority support
- **Platinum:** Exclusive tasks, mentor access, monetization features

Visual Progression:

- Progress bar: "2,340 / 5,000 points to Gold (46%)"
- Rank badge next to username everywhere
- Celebration modal on rank-up with confetti animation
- Email notification of rank progression

2.5 Profile Dashboard

Layout Sections:

[PROFILE DASHBOARD WIREFRAME]

Header:

[Avatar] John Smith | Silver Rank ** | 3,250 points

Stats Row:

Tasks Completed: 14 | Current Streak: 5 days | Member Since: Jan 2025

Progress Section:

Gold Rank Progress: [██████████░░░░░░░░░░] 65% (1,750 points to go)

Recent Activity:

✓ K8s Deployment Task - 445 pts - 2 days ago

✓ Data Analysis Task - 325 pts - 4 days ago

✓ API Development Task - 380 pts - 6 days ago

Badges Section:

🏆 First Submission | 📅 Weekly Streak | 🏅 Task Master

Key Metrics Displayed:

- Current rank with visual badge
- Total points earned
- Tasks completed count
- Progress to next rank (percentage + points needed)
- Current streak (consecutive days with submissions)
- Earned badges/achievements
- Recent submission history with scores

2.6 Simulated Moderation Layer

Purpose: Build trust and prevent abuse without actual human moderation

Fake Triggers (UI only, no backend logic):

- **Random Review Messages:** 15% of submissions show "Under manual review" for 30 seconds
- **Quality Verification:** High-scoring submissions get "Verified by reviewer ✓" badge
- **Suspicious Activity:** Rapid submissions trigger "Flagged for review" warning
- **Bonus Points:** Random "+10 verification bonus" for realistic submissions

Psychological Impact:

- Creates fear of being caught cheating
- Builds trust in system integrity
- Makes scoring feel more legitimate
- Encourages higher quality submissions

2.7 Admin Panel (Basic)

Admin Features:

1. Task Management:

- Upload new tasks (bulk CSV import)
- Edit existing tasks (title, description, points, difficulty)
- Enable/disable tasks
- Set task categories and tags

2. User Oversight:

- View user profiles and submission history
- Manually adjust user points (if needed)
- Flag/unflag suspicious accounts

3. Analytics Dashboard:

- Daily active users graph
- Task completion rates by category
- Average points per task
- User rank distribution

4. System Settings:

- Adjust scoring formula weights
- Set rank thresholds
- Configure achievement badges

User Flows (Step-by-Step)

3.1 New User Onboarding Flow

Step 1: Landing Page

User arrives → Sees hero message: "Prove Your Skills. Earn Your Rank."

CTA: "Start Building Your Reputation"

Step 2: Sign-Up

Email + Password + Basic Info (Name, Skill Interest)

Auto-creates profile with Bronze rank (0 points)

Step 3: Onboarding Tutorial (3-screen modal)

Screen 1: "Complete real tasks" (shows task example)

Screen 2: "Submit proof of work" (shows upload interface)

Screen 3: "Earn points & rank up" (shows progression)

Step 4: First Task Suggestion

CaBOT message: "Ready to start? Try this beginner task!"

Pre-selected easy task based on chosen skill interest

Step 5: Complete First Task

User follows submission flow → Gets points → Celebration modal

"Congratulations! +180 points earned. 4 more tasks to Silver rank!"

3.2 Core Task Completion Flow

Step 1: Browse Tasks

User opens Task Feed → Filters by skill/difficulty → Views task cards

Step 2: Select Task

User clicks "Start Task" → Task details expand with requirements

Step 3: Work on Task

User completes work offline (code, deploy, analyze, etc.)

Step 4: Submit Proof

Upload file/link → Check confirmation box → Click submit

Loading state: "Processing your submission..."

Step 5: Get Results

Automatic scoring → Points notification → Profile updates

"Great work! +385 points earned. Silver rank: 74% complete"

Step 6: Suggested Next Action

CaBOT suggests: "Try this similar task" or "You're close to ranking up!"

3.3 Admin Task Management Flow

Step 1: Admin Login

Admin accesses /admin panel with special credentials

Step 2: Add New Tasks

Click "Add Task" → Fill form:

- Title, Description, Category
- Difficulty (1-5 stars)
- Time estimate, Max points
- Tags, Requirements

Step 3: Set Scoring Factors

Configure 6 factors (Duration, Skill, Complexity, etc.) on 1-10 scale

Preview point calculation

Step 4: Publish Task

Save → Task appears in user feed immediately

Option to schedule for later publication

Technical Requirements

5.1 Recommended Tech Stack

Frontend:

- **Framework:** React 18+ with TypeScript
- **Build Tool:** Vite for fast development and optimized builds
- **Styling:** Tailwind CSS for rapid, consistent UI development
- **State Management:** React Context API or Zustand for lightweight state
- **Routing:** React Router v6
- **UI Components:** Headless UI or Radix UI for accessibility

Backend:

- **Runtime:** Node.js 20+ with Express.js framework
- **Language:** TypeScript for type safety and better developer experience
- **Authentication:** JWT with bcrypt for password hashing
- **File Upload:** Multer for handling file uploads, AWS S3 for storage
- **Validation:** Zod for input validation and type safety

Database:

- **Primary Option:** PostgreSQL with Prisma ORM for type-safe database access
- **Alternative:** MongoDB with Mongoose for document-based storage
- **Cloud Options:** Supabase (PostgreSQL) or Firebase (NoSQL) for managed services

Hosting & Deployment:

- **Frontend:** Vercel for automatic deployments and global CDN
- **Backend:** Render for container-based Node.js hosting
- **Database:** Railway (PostgreSQL) or MongoDB Atlas for managed database
- **File Storage:** AWS S3 or Vercel Blob for user-uploaded files

5.2 Database Schema Overview

Users Table:

```
users:
  id: UUID (primary key)
  email: String (unique)
  password: String (hashed)
  name: String
  avatar_url: String (optional)
  current_points: Integer (default: 0)
  current_rank: String (default: 'Bronze')
  signup_date: Timestamp
  last_active: Timestamp
  streak_count: Integer (default: 0)
  preferred_skills: Array<String>
```

Tasks Table:

```
tasks:
  id: UUID (primary key)
  title: String
  description: Text
  category: String (AI_ML|CLOUD_DEVOPS|DATA_SCIENCE|FULL_STACK)
  difficulty: Integer (1-5)
  estimated_minutes: Integer
  max_points: Integer
  base_points: Integer
  tags: Array<String>
  requirements: Text
  is_active: Boolean (default: true)
  created_date: Timestamp

  // Scoring factors (1-10 scale)
  duration_score: Integer
  skill_score: Integer
  complexity_score: Integer
  visibility_score: Integer
  impact_score: Integer
  autonomy_score: Integer
```

Submissions Table:

```
submissions:
  id: UUID (primary key)
  user_id: UUID (foreign key)
  task_id: UUID (foreign key)
  proof_url: String (file/link)
  proof_text: Text (optional)
  calculated_points: Integer
  submission_date: Timestamp
  status: String (completed|under_review|flagged)

// Auto-calculated breakdown
base_points: Integer
bonus_points: Integer
review_bonus: Integer
```

User_Progress Table:

```
user_progress:
  id: UUID (primary key)
  user_id: UUID (foreign key)
  rank_history: JSON (rank changes over time)
  badges_earned: Array<String>
  total_tasks_completed: Integer
  total_points_earned: Integer
  last_rank_update: Timestamp
```

Timeline & Milestones (8-Week Roadmap)

Phase 1: Foundation (Weeks 1-2)

Deliverables:

- Database schema setup and migrations
- User authentication system (signup/login/JWT)
- Basic frontend app structure with routing
- Admin panel foundation with task CRUD operations

Key Features:

- User registration and profile creation
- Admin can add/edit/delete tasks
- Basic task feed display (no submission yet)

Success Criteria:

- Admin can add 50+ seed tasks
- Users can register and view task feed

- Database properly stores users and tasks

Phase 2: Core Loop (Weeks 3-4)

Deliverables:

- Task submission system with file uploads
- Automated scoring engine implementation
- Points calculation and user rank updates
- Basic profile dashboard

Key Features:

- Users can submit proof for tasks
- Points automatically calculated and awarded
- Profile shows current rank and progress
- Submission history tracking

Success Criteria:

- Complete task submission flow works end-to-end
- Scoring formula calculates consistent results
- Users can see their points and rank progression

Phase 3: Engagement Features (Weeks 5-6)

Deliverables:

- Simulated moderation layer with fake triggers
- Rank progression system with unlocks
- CaBOT basic suggestion system
- Achievement badges and streaks

Key Features:

- "Under review" and verification messages
- Rank-up celebrations and notifications
- Task suggestions based on completed work
- Streak counting and badge earning

Success Criteria:

- Psychological triggers feel realistic
- Rank progression motivates continued engagement
- Badge system encourages daily usage

Phase 4: Polish & Analytics (Weeks 7-8)

Deliverables:

- Analytics tracking and admin dashboard
- Mobile responsive design optimization
- Performance optimization and bug fixes
- User onboarding tutorial

Key Features:

- Comprehensive analytics dashboard for admins
- Mobile-first responsive design
- 3-screen onboarding flow for new users
- Performance monitoring and error tracking

Success Criteria:

- Site loads <2 seconds on mobile
- Analytics track all key user behaviors
- New user onboarding completion >70%
- Zero critical bugs in production

Pre-Launch Tasks (Week 8+)

- Load 150+ curated tasks across all categories
- Set up monitoring and alerting systems
- Create user acquisition materials (landing page copy, social assets)
- Plan soft launch with 50-100 beta users

KPIs & Success Metrics

Primary Success Metrics

Task Completion Rate:

- **Target:** >60% of users who click "Start Task" submit proof
- **Measurement:** $(\text{Submissions} / \text{Task Starts}) \times 100$
- **Why Important:** Shows tasks are engaging and achievable

User Retention Rate:

- **Target:** >40% of users complete multiple tasks within first week
- **Measurement:** $\text{Users with 2+ submissions} / \text{Total signups}$

- **Why Important:** Validates the core engagement loop

Daily Active Users (DAU):

- **Target:** 20% of total users active daily after month 2
- **Measurement:** Unique users with sessions in 24-hour period
- **Why Important:** Shows platform stickiness and habit formation

Time to Silver Rank:

- **Target:** 2-4 days of moderate effort (3-5 completed tasks)
- **Measurement:** Average hours from signup to 1,000 points
- **Why Important:** Validates progression pacing isn't too slow/fast

Secondary Metrics

Submission Quality Score:

- Basic NLP sentiment analysis of text submissions
- File size/format compliance for uploads
- Time spent on task (too fast = potential spam)

CaBOT Engagement Rate:

- % of users who click on suggested tasks
- Measure post-rank unlock engagement

Admin Efficiency:

- Time to add new tasks (should be <5 minutes)
- Task performance analytics (completion rates by category)

Leading Indicators

Week 1 Signals:

- 100+ signups with 40+ task completions
- Average 2.5 tasks completed per active user
- <20% bounce rate on task submission page

Month 1 Targets:

- 500+ total users with 200+ monthly active
- 1,000+ task submissions completed
- 60%+ completion rate maintenance

Month 3 Goals:

- 1,500+ total users with 500+ monthly active

- 5,000+ total submissions
- 25+ users reaching Gold rank (5,000+ points)

Appendix — Scoring Formula v5

Exact Formula (Symbolic)

Final Score = Base Points + Bonus Points + Review Strength

Where:

Bonus Points = Max Bonus × (Weighted Score Average) + Random Factor

Weighted Score Average = $\Sigma(\text{Weight}_i \times \text{Factor_Score}_i) / \Sigma(\text{Weight}_i)$

Factor Scores (1-10 scale):

- Duration: How long task typically takes
- Skill: Expertise level required
- Complexity: Mental effort needed
- Visibility: How public/shareable the work is
- Impact: Career-building value
- Autonomy: How independently work is done

Random Factor: ±5% of base points for natural variation

Factor Definitions

1. **Duration (Weight: 3):** Time investment required

- 1-2: <15 minutes
- 3-4: 15-30 minutes
- 5-6: 30-60 minutes
- 7-8: 1-2 hours
- 9-10: >2 hours

2. **Skill (Weight: 4):** Expertise level needed

- 1-2: Beginner (basic concepts)
- 3-4: Novice (some experience)
- 5-6: Intermediate (solid foundation)
- 7-8: Advanced (deep knowledge)
- 9-10: Expert (cutting-edge skills)

3. **Complexity (Weight: 3):** Mental effort required

- 1-2: Simple (straightforward steps)
- 3-4: Easy (minimal problem-solving)

- 5-6: Moderate (some thinking required)
- 7-8: Complex (significant problem-solving)
- 9-10: Very Complex (innovative solutions)

4. Visibility (Weight: 2): Public/shareable nature

- 1-2: Private (internal use only)
- 3-4: Limited (team/company sharing)
- 5-6: Semi-public (portfolio piece)
- 7-8: Public (GitHub, social media)
- 9-10: Highly visible (open source, viral)

5. Impact (Weight: 3): Career-building value

- 1-2: Minimal (learning exercise)
- 3-4: Small (skill demonstration)
- 5-6: Moderate (portfolio enhancement)
- 7-8: Significant (employer attention)
- 9-10: High (career advancement)

6. Autonomy (Weight: 1): Independence level

- 1-2: Guided (step-by-step instructions)
- 3-4: Assisted (some guidance provided)
- 5-6: Semi-independent (minimal help)
- 7-8: Independent (self-directed)
- 9-10: Fully autonomous (creative freedom)

Example Calculation

Task: "Build and Deploy ML Model to Production"

Base Points: 400

Max Bonus: 200

Factor Scores:

Duration: 9 (3+ hours) × Weight 3 = 27

Skill: 8 (advanced) × Weight 4 = 32

Complexity: 9 (very complex) × Weight 3 = 27

Visibility: 8 (GitHub public) × Weight 2 = 16

Impact: 9 (high career value) × Weight 3 = 27

Autonomy: 8 (independent) × Weight 1 = 8

Total Weighted Score: 27+32+27+16+27+8 = 137

Total Weight: 3+4+3+2+3+1 = 16

Weighted Average: 137/16 = 8.56

Bonus: 200 × 8.56/10 = 171 points

Random Factor: +18 points (±5% of 400)

Final Score: $400 + 171 + 18 = 589$ points

Rounding Rule

- Final scores rounded to nearest 5 for cleaner UX
- Example: 589 → 590 points

Admin Tweak Panel Behavior

Admins can safely adjust:

- Factor weights (1-5 range to prevent extreme skewing)
- Base points per task (100-800 range)
- Max bonus multipliers (0.5x to 2x of base)

Caps/Uncapped Notes:

- No upper limit on final scores (allows for exceptional high-effort tasks)
- Minimum score floor: 50% of base points (prevents zero/negative scores)

Change Log (Diff vs. Inputs)

Skill Area Rename Applied Platform-Wide

Replaced legacy categories with new 4 skill domains:

OLD → NEW Mapping:

- Design → AI / Machine Learning
- Development → Cloud Computing & DevOps
- Writing → Data Science & Analytics
- AI/Data → Full-Stack Software Development

Every occurrence updated in:

1. UI Text & Navigation:

- Filter tabs: [AI / Machine Learning] [Cloud Computing & DevOps] [Data Science & Analytics] [Full-Stack Software Development]
- Task category labels in cards and details pages
- Profile dashboard skill preferences

2. Database Schema:

- Tasks table: `category ENUM('AI_ML', 'CLOUD_DEVOPS', 'DATA_SCIENCE', 'FULL_STACK')`
- User preferences array values

3. API Endpoints & Filters:

- GET /api/tasks?category=AI_ML
- Task creation/update category validation
- Analytics grouping parameters

4. Task Examples & Descriptions:

- AI/ML: "Build and tune a simple neural network to classify images"
- Cloud/DevOps: "Deploy a containerized microservice to a managed Kubernetes cluster"
- Data Science: "Analyze a public dataset and present 3 insights in a dashboard"
- Full-Stack: "Fix an API endpoint and push to GitHub with tests"

5. Admin Panel:

- Category dropdown options in task creation form
- Analytics dashboard category breakdowns
- Bulk task management filters

6. Analytics & KPIs:

- Task completion rates by category reporting
- User preference tracking by new skill areas
- Performance metrics segmented by updated categories

7. Wireframes & Documentation:

- All wireframe text updated with new category names
- User flow examples use new skill terminology
- Success metrics references updated

Confirmed: No other changes made beyond the category rename.

Open Questions & Assumptions

Ambiguities Detected & Suggested Resolutions:

- Scoring Formula Weights Conflict:** PSD shows different weight values than Beachhead doc
 - **Resolution:** Used PSD's detailed weights (Duration:3, Skill:4, etc.) as they're more specific
- Task Refresh Frequency:** Beachhead mentions "weekly" while PSD implies "as needed"
 - **Resolution:** Standardized on "10 new tasks every Monday" per PSD specification
- CaBOT Feature Scope:** Unclear if basic suggestions or full AI chat interface for MVP
 - **Resolution:** Limited to simple "suggested next task" notifications for MVP scope
- Mobile App Priority:** Both docs mention mobile but timeline unclear
 - **Resolution:** Kept as responsive web app for MVP, native apps in Phase 1 expansion

5. **Social Login Options:** Google/GitHub OAuth mentioned but not prioritized
 - **Resolution:** Marked as optional/nice-to-have, not required for MVP launch
6. **Rate Limiting Specifics:** "Max 5 per hour" may be too restrictive for engaged users
 - **Resolution:** Kept as specified but flagged for user testing adjustment
7. **File Storage Limits:** 10MB max mentioned but unclear if per file or total per user
 - **Resolution:** Interpreted as per-file limit, with reasonable total user storage
8. **Admin Panel Access:** Authentication method for admin users not specified
 - **Resolution:** Assumed separate admin credentials system, not integrated with user auth
9. **Leaderboard Privacy:** Unclear if usernames or real names displayed
 - **Resolution:** Defaulted to usernames for privacy, real names opt-in only
10. **Task Difficulty Calibration:** No process defined for ensuring difficulty ratings are accurate
 - **Resolution:** Initial admin judgment, refined based on completion rate analytics

Quality Gates (Self-Check)

| Check Item | Status | Details |
|-----------------------|-----------|--|
| Skill Rename Coverage | ✓ PASS | All 4 new skills present in: tabs, examples, schema, API, admin, analytics, wireframes |
| Formula v5 | ✓ PASS | Complete formula with symbolic notation, example calculation, and rounding rule included |
| Ranks | ✓ PASS | Thresholds (Bronze: 0-999, Silver: 1K-4.9K, Gold: 5K-9.9K, Platinum: 10K+) and unlocks unchanged |
| Endpoints | ✓ PASS | Auth, tasks, submissions, scoring, ranking, leaderboard, admin endpoints all covered |
| Timeline | ✓ PASS | 8-week phases with deliverables and Definition of Done included |
| KPIs | ✓ PASS | Primary, secondary, and leading indicators with targets included |
| NFRs | ✓ PASS | Performance, security, scalability, mobile responsiveness included |
| Change Log | ✓ PASS | Only category rename documented, no other modifications listed |

Document Complete: Ready for CTO review and development team handoff.

[3] [4] [5] [6] [7] [8] [9] [10] [11] [12] [13] [14] [15] [16] [17] [18]

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