DIGT2107: Practice of Software Development
Project Iteration 2: Detailed User Stories, Requirements, and Initial Prototype
OpenBid

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Contents

1 Introduction

Project Name: OpenBid
Team Number: #1
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Document Overview This document outlines the deliverables for Iteration 2 of OpenBid: detailed user stories, functional and non-functional requirements. The aim is to establish a solid foundation for subsequent iterations by clarifying what the system should do and validating the core experience with a working prototype.

2 Functional and Non-Functional Requirements

2.1 Functional Requirements

1. **Account & Identity:** Users shall be able to sign up and sign in via OAuth (Google/Apple) and email+password. Mandatory KYC must be completed before Contractors can publish profiles or Bidders can place offers.

2. **Two-Factor Authentication (2FA):** Users shall confirm sign-in with Duo 2FA for sensitive actions (login, payouts).

3. **Contractor Profiles:** Contractors shall create, update, and delete professional profiles with details including skills, description, photos, rate (fixed/hourly), availability, and location (map pin/address).

4. **Discovery:** Bidders shall browse Contractors in list and map views, with filters by radius, category/skill, budget range, and availability date.

5. **Bidding:** Job bidders shall place, edit, and withdraw bids (amount, note, ETA). Contractors shall accept a winning bid.

6. **Payments (Escrow):** When a Contractor accepts an offer, the Bidder shall fund an escrow hold. On job completion, funds shall be captured and paid out to the Contractor via Stripe Connect.

7. **Messaging:** Contractors and Bidders shall exchange secure messages within the context of an offer, with support for attachments and report/block controls.

8. **Reviews:** Both parties shall leave ratings and text reviews after completion.

9. **Safety Score:** The system shall compute a location safety score (0–100) and apply graduated friction (tips, daylight default, verified-only, or manual review).

10. **Admin:** Admins shall review reports, manage categories, and handle disputes via a basic dashboard.

2.2 Non-Functional Requirements

- **Performance:** Map/list browse and search shall return results in ≤ 500 ms p95 for target metro; prototype may use simplified filters.

- **Usability:** Mobile-first, accessible (WCAG 2.1 AA where practical); clear copy for KYC/2FA and escrow steps.

- **Security:** All traffic over TLS; short-lived JWTs; server-side validation; reCAPTCHA on signup/post/bid.

- **Scalability:** Stateless API (Node/Express) behind Firebase/Cloud Run; Firestore as primary data store; storage via Firebase Cloud Storage.

- **Reliability:** Error tracking via Sentry; observability with OpenTelemetry; automated CI checks on PRs.

- **Privacy:** Approximate location shown pre-accept; exact address released to the accepted job assignee only; phone masking post-accept.

3 Use Cases

3.1 Use Case Descriptions and UML diagrams

UC-1: Manage Jobs (Job Poster)

Actors: Contractor

Description: Create, update, and delete job postings with required details.

Preconditions: User is authenticated and KYC verified.
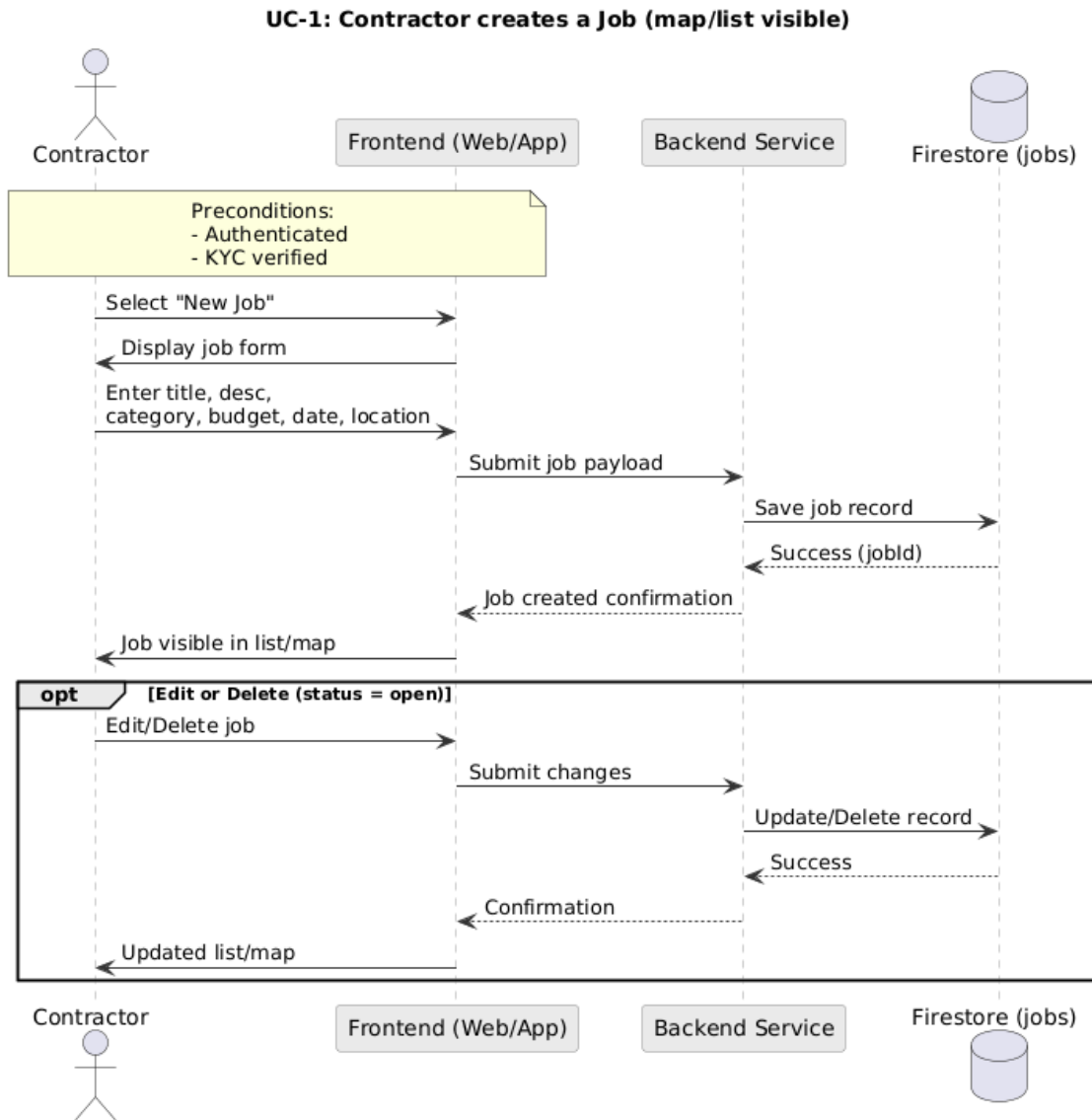
Figure 1: Use Case 1: Manage Jobs

Main Flow:

1. Contractor selects "New Job".

2. System prompts for title, description, category, budget type/amount, date, and location.

3. Contractor submits; system validates and saves to database; job appears on map/list.

4. Contractor may edit or delete until a bid is accepted.

Postconditions: Job is persisted and visible to eligible bidders and **browsers**.

UC-2: Browse & Bid (Job Bidder)

Actors: Bidder

Description: Discover nearby jobs and place bids.

Preconditions: User is authenticated; KYC verified.
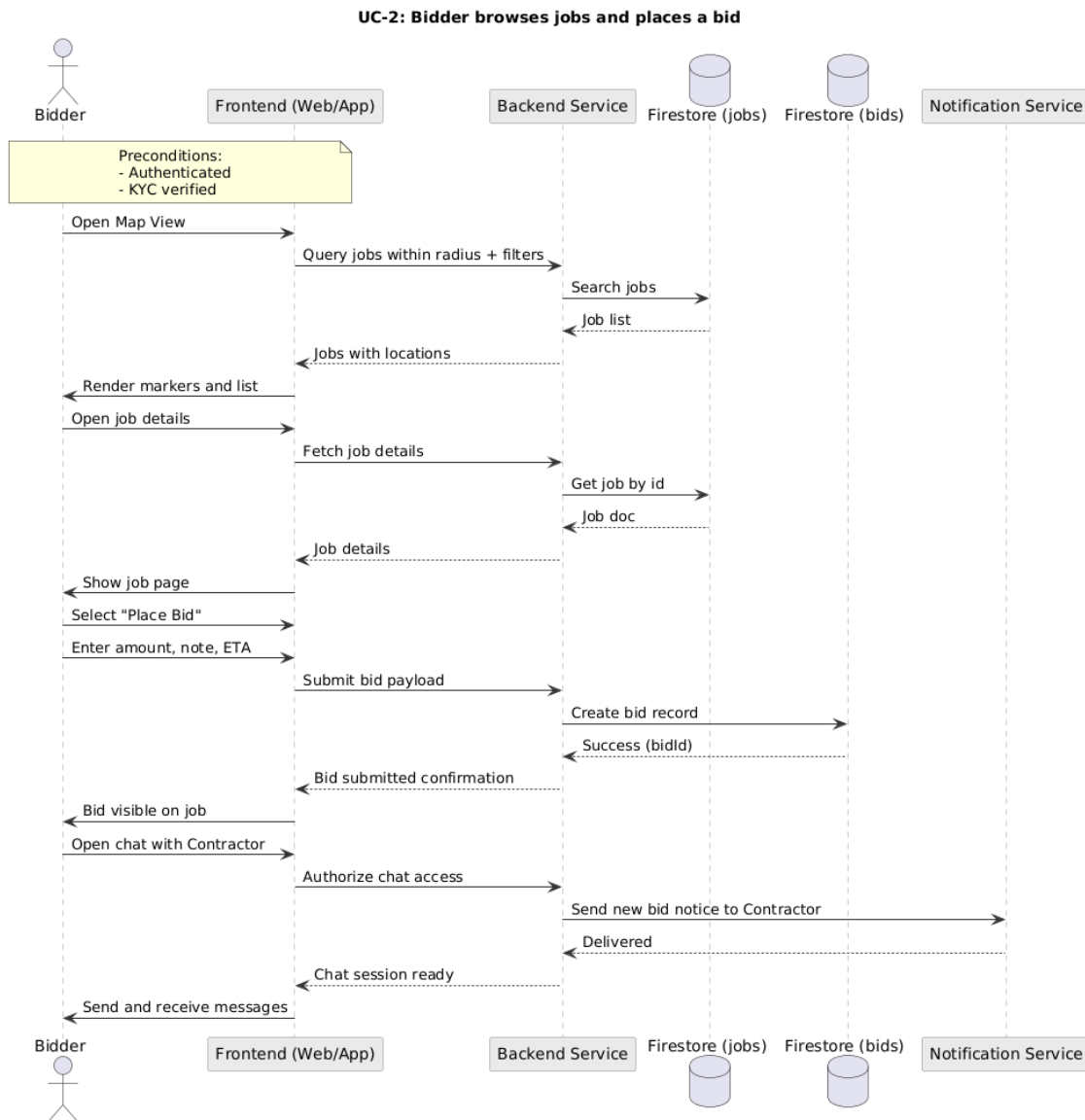

Figure 2: Use Case 2: Browse & Bid

Main Flow:

1. Bidder opens map view; system shows jobs within radius with filters.

2. Bidder opens a job, reviews details, and selects "Place Bid".

3. Bidder enters amount, note, and ETA; system validates and saves bid.

4. Bidder can chat with the Contractor after submitting a bid.

5. Bidder can edit/withdraw bid before award.

Postconditions: Bid saved and visible to the Contractor.

UC-3: Award & Escrow (Job Poster)

Actors: Contractor

Description: Compare bids, accept a winner, and fund escrow.

Preconditions: Contractor is authenticated; job has active bids; Contractor has a payment method saved.
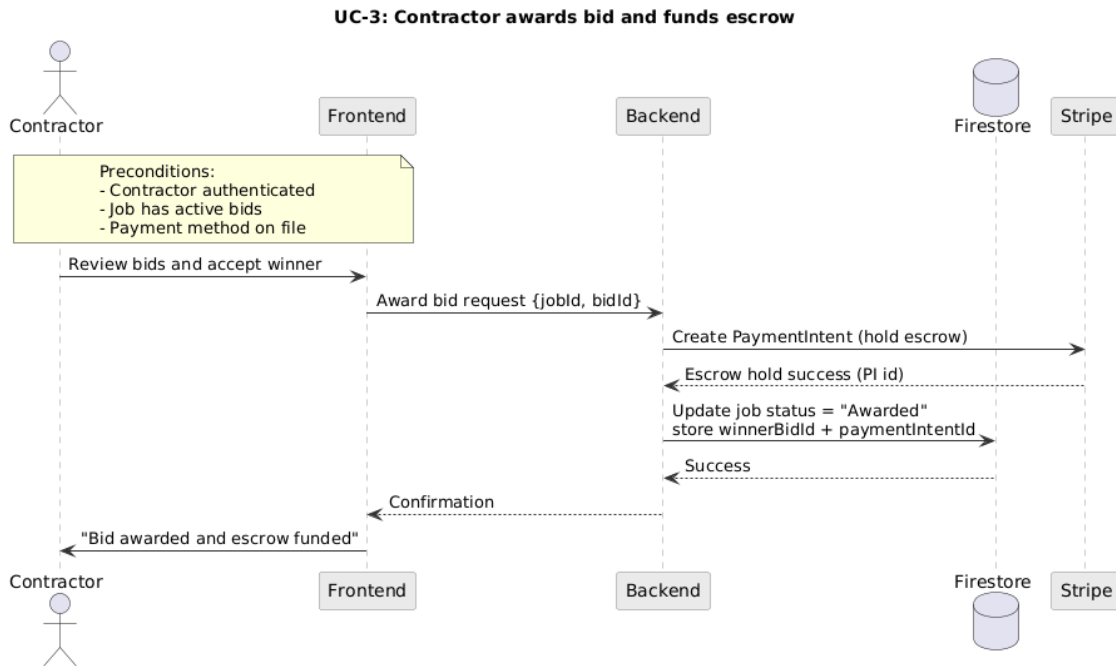
Figure 3: Use Case 3: Award & Escrow

Main Flow:

1. Contractor reviews bids (amount, ETA, ratings).

2. Contractor accepts a bid; system creates a Stripe PaymentIntent (hold).

3. On success, system marks job as awarded and opens thread with winner.

Postconditions: Funds on hold; winner can proceed.

UC-4: Complete & Payout

Actors: Job Winner, Contractor

Description: Job Winner marks work done; Contractor confirms; funds captured and paid out.

Preconditions: Job awarded; escrow hold succeeded.

Figure 4: Use Case 4: Complete & Payout

Main Flow:

1. Job Winner marks job completed; system notifies Contractor.

2. Contractor confirms completion (or opens dispute).

3. On confirmation, system captures funds and pays out via Stripe Connect.
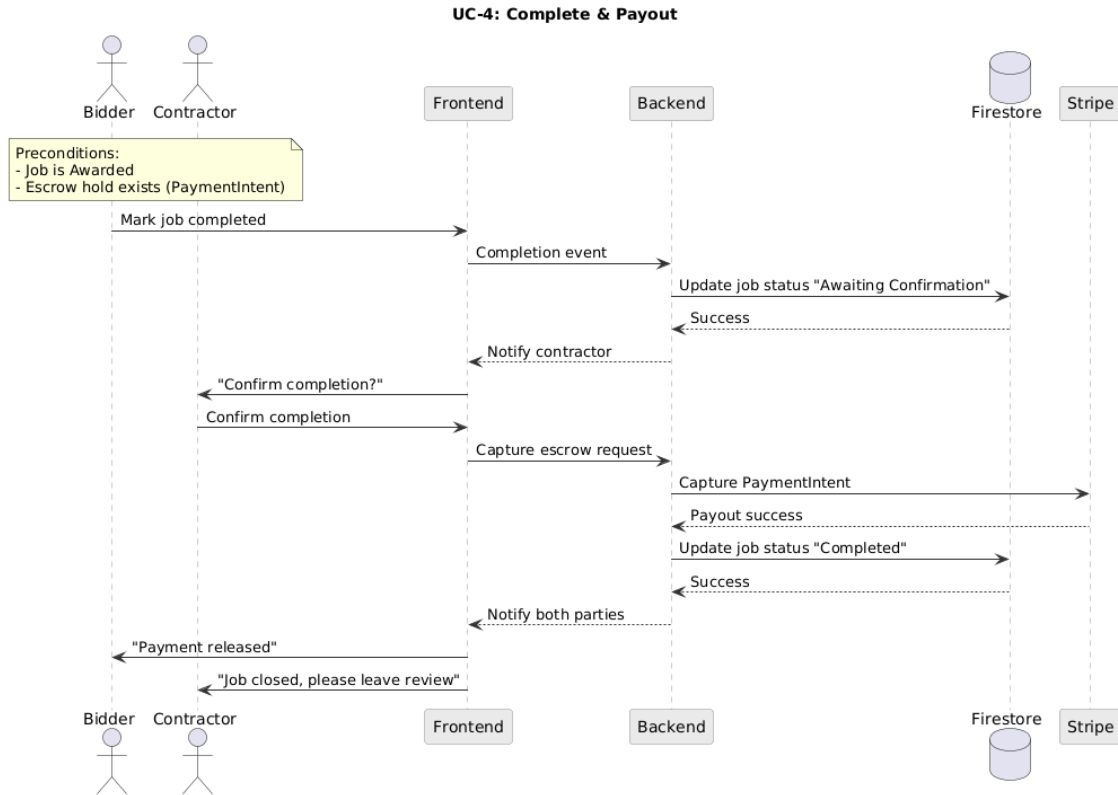
Postconditions: Payment captured; both parties can review each other.

4 Detailed User Stories

Job Posters

US-1: Post a New Job (High, 3 pts) As a **Contractor**, I want to add a job with title, description, photos, budget, date, and a map location so bidders can bid.

- **Acceptance:** Required fields validated; job saved; appears on map/list; Contractor can edit/delete until award.

US-2: Accept a Bid & Fund Escrow (High, 5 pts) As a **Contractor**, I want to accept a bid and put funds on hold so payment is guaranteed on completion.

- **Acceptance:** Stripe hold succeeds; job moves to `awarded`; chat thread opens with winner.

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US-3: Safety Score Guidance (Medium, 3 pts)   As a **Contractor**, I want safety guidance at post-time so I can choose safer options (e.g., daylight/public meetup).

- **Acceptance:** Score shown with tips; low-score flows add friction or require verification.

US-4: Complete KYC (High, 3 pts)   As a **Contractor**, I want to verify my identity (document + selfie) so I can post jobs safely.

- **Acceptance:** Stripe Identity flow completes; app shows verified badge; posting features unlock.

US-5: Duo 2FA (Medium, 2 pts)   As a **Contractor**, I want Duo phone confirmation so my account is protected during sign-in and payouts.

- **Acceptance:** 2FA challenge required; recovery path documented.

US-6: Job Thread Messaging (Medium, 3 pts)   As a **Contractor**, I want a per-job chat so I can coordinate details with bidders.

- **Acceptance:** Send/receive text; attachments; report/block; notifications.

US-7: Leave Reviews (Medium, 2 pts)   As a **Contractor**, I want to rate and review bidders after completion so future users can trust matches.

- **Acceptance:** 1–5 stars plus comment; appears on bidder profile; single review per job.

Job Bidders

US-8: Browse Nearby Jobs (High, 3 pts)   As a **bidder**, I want to see jobs near me with filters so I can quickly find relevant work.

- **Acceptance:** Map/list render; radius/category/budget/date filters; open job details view.

US-9: Place a Bid (High, 5 pts)   As a **bidder**, I want to place a bid with amount, note, and ETA so the Contractor can evaluate me.

- **Acceptance:** Bid saved; Contractor notified; bidder can edit/withdraw prior to award.

US-10: Complete KYC (High, 3 pts)   As a **bidder**, I want to verify my identity (document + selfie) so I can bid on jobs safely.

- **Acceptance:** Stripe Identity flow completes; app shows verified badge; bidding features unlock.

US-11: Duo 2FA (Medium, 2 pts)   As a **bidder**, I want Duo phone confirmation so my account is protected during sign-in and payouts.

- **Acceptance:** 2FA challenge required; recovery path documented.

US-12: Job Thread Messaging (Medium, 3 pts)   As a **bidder**, I want a per-job chat so I can coordinate details with Contractor.

- **Acceptance:** Send/receive text; attachments; report/block; notifications.

US-13: Leave Reviews (Medium, 2 pts) As a **bidder**, I want to rate and review Contractor after completion so future users can trust matches.

- **Acceptance:** 1–5 stars plus comment; appears on Contractor profile; single review per job.

Job Browsers (Not KYC-Verified Users)

US-14: Browse Jobs Read-Only (Medium, 2 pts) As a **browser**, I want to explore posted jobs on a map in read-only mode, so I can understand the platform's services before committing.

- **Acceptance:** Map/list view available; limited job details visible; registration prompt when trying to post/bid.

US-15: View Limited Job Details (Medium, 1 pt) As a **browser**, I want to view limited job details (e.g., title, category, approximate location, budget range) without registering, so I see the platform's value.

- **Acceptance:** Basic job info visible; contact details and full descriptions hidden; registration required for full access.

US-16: Registration Prompt (Medium, 1 pt) As a **browser**, I want to be prompted to create an account if I try to post a job or place a bid, so I know registration is required.

- **Acceptance:** Clear registration modal appears; KYC/2FA requirements explained; seamless signup flow.

US-17: KYC/2FA Instructions (Medium, 1 pt) As a **newly registered user**, I want clear instructions that I must complete KYC verification and enable Duo 2FA before being allowed to post jobs or bid, so I understand the trust policy.

- **Acceptance:** Step-by-step guidance; progress indicators; help resources available.

US-18: Access Support Resources (Low, 1 pt) As a **browser**, I want access to support or FAQ pages, so I can ask questions or learn more before verifying my account.

- **Acceptance:** Support contact form; FAQ section; help documentation accessible without full registration.

Admin

US-19: Review Reports (High, 3 pts) As an **admin**, I want to review user reports and disputes so I can maintain platform safety and integrity.

- **Acceptance:** Report dashboard; case management tools; resolution tracking.

US-20: Manage Categories (Medium, 2 pts) As an **admin**, I want to manage job categories so the platform stays organized and relevant.

- **Acceptance:** Category CRUD operations; validation; audit logging.

US-21: Handle Disputes (High, 4 pts)   As an **admin**, I want to handle payment and job disputes so conflicts are resolved fairly.

- **Acceptance:** Dispute intake; evidence review; resolution workflow; communication tools.

US-22: System Monitoring (Medium, 2 pts)   As an **admin**, I want to monitor system health and performance so I can ensure platform reliability.

- **Acceptance:** Dashboard with metrics; alert system; performance monitoring.

5   Documentation Updates

5.1   System Architecture (Prototype)

Frontend: React + SCSS (Firebase Hosting)
Backend: Node.js + Express (Firebase Functions or Cloud Run)
Database: Firebase Firestore (NoSQL, real-time)
Storage: Firebase Cloud Storage
Auth: Firebase Auth (OAuth, email+password) + Duo 2FA; KYC via Stripe Identity
Payments: Stripe Connect (escrow)
Maps: Google Maps JS, Places, Geocoding, Distance Matrix

5.2   Planning Document and Log

- **Changes from Iteration 1.1:** Committed to Firebase stack; clarified escrow flow; added explicit safety score gating.

- **Plan Delta:** Pulled reviews into Iteration 2 tail; background checks remain later.

6   Iteration Plan and Backlog

6.1   Iteration Plan (Weeks 3–5)

- **Week 3:** Finalize functional requirements; implement US-1 (post job) and US-8 (browse jobs); Firestore rules draft.

- **Week 4:** Implement US-9 (place bid) and US-2 (accept bid & escrow stub); basic messaging skeleton.

- **Week 5:** Review feedback; refine UX; stabilize prototype; add US-6/US-12 (chat MVP) and US-7/US-13 (reviews, stub).

6.2   Updated Backlog (Top)

ID	Story	Priority	Pts
US-1	Post a new job	High	3
US-2	Accept bid & fund escrow	High	5
US-8	Browse nearby jobs	High	3
US-9	Place a bid	High	5
US-4	Complete KYC (Contractor)	High	3

US-10	Complete KYC (Bidder)	High	3
US-5	Duo 2FA (Contractor)	Medium	2
US-11	Duo 2FA (Bidder)	Medium	2
US-3	Safety score guidance	Medium	3
US-6	Job thread messaging (Contractor)	Medium	3
US-12	Job thread messaging (Bidder)	Medium	3
US-7	Leave reviews (Contractor)	Medium	2
US-13	Leave reviews (Bidder)	Medium	2
US-14	Browse jobs read-only (Browser)	Medium	2
US-15	View limited job details (Browser)	Medium	1
US-16	Registration prompt (Browser)	Medium	1
US-17	KYC/2FA instructions (Browser)	Medium	1
US-18	Access support resources (Browser)	Low	1
US-19	Review reports (Admin)	High	3
US-20	Manage categories (Admin)	Medium	2
US-21	Handle disputes (Admin)	High	4
US-22	System monitoring (Admin)	Medium	2

7 Submission Guidelines

- **GitHub Repository:** Push prototype code and documentation; tag release as `ITR1.2`.

- **eClass Submission:** Submit one PDF containing: Requirements; Use Case Diagram & Descriptions; Detailed User Stories; Initial Prototype Overview; Updated Plan and Backlog.

Appendix A: API Inventory (Condensed)

Area	APIs / Notes
Auth/Identity	Firebase Auth (OAuth, email+password); Duo 2FA; Stripe Identity (KYC)
Payments	Stripe Connect (escrow), Webhooks, Radar
Maps/Geo	Google Maps JS; Places Autocomplete/Details; Geocoding; Distance Matrix
Notifications	Firebase Cloud Messaging; Twilio SMS + Proxy
Storage	Firebase Cloud Storage
Analytics/Ops	PostHog; Sentry; OpenTelemetry

Appendix B: Firestore Schema (Indicative)

Listing 1: Firestore Collections & Example Documents

```
/users/{userId}
{
  "name": "string",
  "email": "string",
  "phone": "string",
  "avatarUrl": "string",
```

```
 7      "isBidder": true,
 8      "kycStatus": "pending" | "verified" | "failed",
 9      "duoEnabled": true,
10      "createdAt": "timestamp",
11      "updatedAt": "timestamp"
12    }
13
14    /jobs/{jobId}
15    {
16      "contractorID": "users/{userId}",
17      "title": "string",
18      "description": "string",
19      "category": "string",
20      "budgetType": "fixed" | "open",
21      "budgetAmount": 120.50,
22      "location": {"lat": 43.6426, "lng": -79.3871, "address": "string" },
23      "desiredDate": "timestamp",
24      "status": "open" | "awarded" | "in_progress" | "completed" | "cancelled",
25      "createdAt": "timestamp",
26      "updatedAt": "timestamp"
27    }
28
29    /bids/{bidId}
30    {
31      "jobId": "jobs/{jobId}",
32      "bidderId": "users/{userId}",
33      "amount": 95.00,
34      "note": "string",
35      "etaHours": 6,
36      "status": "active" | "declined" | "accepted" | "cancelled",
37      "createdAt": "timestamp"
38    }
39
40    /messages/{messageId}
41    {
42      "jobId": "jobs/{jobId}",
43      "senderId": "users/{userId}",
44      "body": "string",
45      "attachmentUrl": "string",
46      "createdAt": "timestamp"
47    }
48
49    /reviews/{reviewId}
50    {
51      "jobId": "jobs/{jobId}",
52      "raterId": "users/{userId}",
53      "rateeId": "users/{userId}",
54      "rating": 5,
55      "comment": "string",
56      "createdAt": "timestamp"
57    }
```