

Sequence Diagram Explanation

The sequence diagram illustrates the time-ordered interactions across the system's three-tier architecture to fulfill functional requirements FR-001 through FR-009.

Phase 1: Authentication & Sync (FR-009)

- Trigger: The process begins when the Professional Freelancer opens the extension or attempts to log in.
- Validation: The Browser Extension (Tier 1) sends a Validate Session request to the Backend API (Tier 2).
- Data Verification: The Backend API checks the user's status within MongoDB Atlas (Tier 3).
- Outcome: Once the session is confirmed as valid, an Auth Success signal is sent back to the extension, completing the secure synchronization.

Phase 2: Client Intelligence (FR-001, FR-002, FR-003)

- Scraping (FR-001): When the user navigates to an Upwork Job Page, the extension automatically scrapes DOM Metadata, including the client's Hire Rate, Spend, and Sentiment.
- Analysis Request: This metadata is sent via a POST /analyze-client request to the Backend API.
- Scoring (FR-002): The Backend executes the Scoring Engine using the formula

$$S = w_1 \cdot H + w_2 \cdot S + w_3 \cdot \text{Sent}$$

- Decision Support (FR-003): The API processes Logic Gates to determine the appropriate Skip/Apply Badge.
- Rendering: The analysis results (Score + Badge) are sent back to the extension, which renders a UI Overlay directly on the Upwork page.

Phase 3: Proposal Generation (FR-004, FR-006, FR-007)

- User Action: The freelancer selects a tone and clicks "Generate," triggering a POST /generate-proposal request with the Tone and TemplateID.
- Context Retrieval (FR-004, FR-006): The Backend API fetches the User Profile (Skills, Bio) and the Ranked Template (Template Body) from MongoDB.

- AI Request (FR-007): A Request Generation is sent to the AI Service (GPT-4), incorporating the specific context provided by the freelancer.
- Result: The AI Service returns a Custom Draft to the Backend API.

Phase 4: Persistence & Feedback (FR-005)

- Archiving (FR-005): The Backend API automatically saves the generated draft to the Proposal History in MongoDB.
- Final Output: The Final AI Draft is delivered to the Browser Extension, which displays the draft in the editor for the freelancer to review and use.

Screenshot:

