CASE STUDY #02 · TECHNICAL RESEARCH & ARCHITECTURE DOCUMENTATION

Moneta Funded AI Customer Support Assistant

Complete Engineering Blueprint, Verified Source Directory, Exact Static Rulebook Specification, Question Coverage Analysis, and Scaling Roadmap

Author / Builder	Hotu Ram (GitHub: `HotuRam`)	**Report Date**	November 21, 2026
Repository	github.com/HotuRam/Hotu_Moneta_Support_AI	**Worker Name**	`hotu-moneta-support-ai`
Live Prototype	hotu-moneta-support-ai.theiitianict.workers.dev	**Health Endpoint**	`GET /api/status` & `POST /api/ask`
Project Scope	Independent portfolio prototype demonstrating strict prop-firm domain scoping, exact drawdown and discount math, low-latency multi-model Gemini failover, and automated daily knowledge synchronization.		

1. Executive Summary & Research Objective

Proprietary trading firms face an unusually high volume of repetitive, mathematically precise Tier-1 customer support tickets. Traders frequently inquire about daily drawdown resets at `22:00 UTC`, trailing versus static maximum loss locks, active discount codes, news-trading carve-outs, regional platform eligibility, payout delays, and multi-stage KYC verification. Conventional keyword FAQ widgets fail on these queries because they cannot perform live dollar calculations or synthesize overlapping program rules.

The **Moneta Funded AI Customer Support Assistant (Case Study #02)** was engineered as an independent, serverless support prototype hosted on Cloudflare Workers and powered by Google Gemini API models. Rather than acting as an unconstrained general chatbot, the system enforces strict domain boundaries: it answers only questions tied to Moneta Funded, proprietary trading rules, pricing math, account troubleshooting, and parent-broker Moneta Markets integrations, while politely declining unrelated off-topic requests.

This document serves as a permanent technical reference and research archive. It consolidates every external source and production URL, explains how each repository file was constructed and debugged, reproduces the exact static rulebook embedded inside `src/index.js` alongside the five Tier-1 operational troubleshooting workflows, quantifies question coverage and verification benchmarks, evaluates daily auto-refresh and Q&A PDF scaling strategies, and documents outreach branding and QR distribution practices.

> **Production Snapshot & Disclosure:** At the time of documentation, production deployment `b7b61987` (built from GitHub commit `c3cdeae` on branch `main`) is live on Cloudflare Workers with `0` runtime errors and `3 ms` median Worker CPU time across `40` logged invocations. The assistant explicitly identifies itself as an independent portfolio prototype built by Hotu Ram and never claims access to private user dashboards or internal Moneta Funded account databases.

2. Verified Sources, Complete Links & Commit Audit Trail

Every operational rule, endpoint, deployment link, and utility documented in this project traces back to a verified source recorded during development. No external URLs or metrics have been fabricated; the table below provides the complete reference directory for ongoing maintenance and future audits.

Source / Resource	Complete URL / Identifier	Role in Project
Official Prop Firm Site	https://www.monetafunded.com/	Primary policy reference, live checkout verification destination, and daily Cron fetch target.
Official Support Desk	`support@monetafunded.com`	Escalation target for private account audits, payout traces, manual KYC review, and billing disputes.
Live Chatbot URL	https://hotu-moneta-support-ai.theiitianict.workers.dev	Public production web application serving static frontend assets and live AI support responses.
Worker Ask Endpoint	`https://hotu-moneta-support-ai.theiitianict.workers.dev/api/ask`	`POST` JSON endpoint receiving trader questions and returning structured JSON answers.
Worker Status Endpoint	https://hotu-moneta-support-ai.theiitianict.workers.dev/api/status	`GET` diagnostic endpoint reporting API key presence, active model order, and KV sync status.
GitHub Repository	https://github.com/HotuRam/Hotu_Moneta_Support_AI	Source-of-truth Git repository connected to Cloudflare Workers automatic deployment pipeline.
Verified Commit Reference	github.com/HotuRam/Hotu_Moneta_Support_AI/commit/c3cdeae6e20ba52537ecb75be1013a97fc45b369	Verified commit deploying strict prop-firm domain scoping, current Gemini failover, and `scheduled()` hook.
Gemini Generate API	`https://generativelanguage.googleapis.com/v1beta/models/{model}:generateContent`	Google AI REST endpoint invoked by the Cloudflare Worker using header `x-goog-api-key`.
Static QR Generator	https://www.qrcode-monkey.com	Recommended zero-expiration static QR encoder supporting centered Moneta AI logo embedding.
Icon Conversion Utilities	`cloudconvert.com` / `convertio.co`	PNG-to-ICO conversion tools referenced for creating double-clickable Windows desktop shortcuts.

2.1 Version History & Commit Evolution

Development progressed through iterative live commits directly inside the GitHub web interface, automatically triggering Cloudflare builds on every push to `main`. During debugging, GitHub's standard commit diff screen—which highlights removed lines in red (`-`) and added lines in green (`+`)—was audited closely to confirm clean full-file replacements rather than syntax errors.

Commit / Build	File Modified	Engineering Purpose & Key Outcome
`25164ae`	`src/index.js`	Refactored `RULEBOOK_SYSTEM_PROMPT` from a multi-line backtick template literal into a JavaScript string array joined by `.join("\n")` to eliminate paste truncation issues.
`c68a1e4`	`src/index.js`	Embedded direct promo codes (`PROPINDER50` , `MONETA42`) and entry pricing directly in the prompt; removed blocking live homepage fetches from `/api/ask` to cut request latency.
`c19cc0d`	`src/index.js`	Tightened upfront response directives (`+1 -1` line adjustment) so the assistant leads with codes, percentages, Sprint exclusions, and exact checkout math in the first two sentences.
`c3cdeae` / `b7b61987`	`src/index.js`	Introduced strict prop-firm domain scope lock, updated Gemini 3.5–4 failover list, added `GET /api/status` health check, and added the `scheduled()` Cron handler for daily KV sync. Passed `1/1` check.
Speed Patch	`src/index.js`	Reordered fastest models first (`gemini-3.5-flash-lite` , `gemini-3.1-flash-lite`), enforced `MINIMAL` / `LOW` thinking levels, capped `maxOutputTokens: 650` , and added an `8000 ms` per-model timeout.

3. System Architecture & How Every File Was Created

The chatbot runs on a zero-server, edge-native architecture hosted entirely on Cloudflare Workers. Separating static presentation files (`public/`) from server-side AI orchestration (`src/index.js`) keeps the Google Gemini API key completely hidden from browser users while delivering sub-5ms edge routing worldwide.

3.1 End-to-End Request Lifecycle

1. **Frontend Delivery:** When a user opens `https://hotu-moneta-support-ai.theiitianict.workers.dev` , Cloudflare Workers routes non-API paths to `env.ASSETS.fetch(request)` , serving the user interface from the `./public` directory.
2. **Query Submission:** When a trader submits a question, the frontend sends a JSON payload (`{"question": "..."}`) via `POST /api/ask` . Because `wrangler.jsonc` declares `"run_worker_first": ["/api/*"]` , Cloudflare intercepts all `/api/*` routes before checking static assets.
3. **Context Assembly:** Inside `handleAsk()` , the Worker loads the static `RULEBOOK_SYSTEM_PROMPT` defined inside `src/index.js` . If the optional `KNOWLEDGE_KV` binding is connected, it reads key `daily_site_snapshot` and appends the latest synced website text (up to 2,500 characters) with its UTC timestamp.

4. **Failover Inference:** The Worker iterates through `MODEL_CANDIDATES` sequentially. Each request includes an `8000 ms` `AbortController` timeout, forces JSON output (`responseMimeType: "application/json"`), caps output length at `650` tokens, and sets low-latency `thinkingConfig` levels.
5. **Response Normalization:** If a model returns `401` or `403` , the Worker aborts immediately and alerts the administrator to inspect `GEMINI_API_KEY` . On transient overload (`429` / `503`) or timeout, it falls through to the next candidate. Upon success, markdown code fences are stripped, JSON is parsed into `category` , `short` , and `long` fields, and the response returns with HTTP `200` alongside the active `model` ID and `lastSynced` timestamp.

3.2 Complete Repository File Inventory

File Path	Status	Contents, Creation Method & Responsibilities
`src/index.js`	Active (Production)	Core Cloudflare Worker script created and updated via GitHub editor. Holds the **entire static rulebook** (`RULEBOOK_SYSTEM_PROMPT`), model failover array, `/api/ask` , `/api/status` , and daily `scheduled()` Cron logic.
`wrangler.jsonc`	Active (Config)	Cloudflare Workers deployment manifest defining Worker name, entrypoint (`src/index.js`), compatibility date (`2026-11-21`), static asset binding (`ASSETS`), Workers Logs observability, daily Cron schedule (`0 22 * * *`), and `KNOWLEDGE_KV` namespace binding.
`public/index.html`	Active (Frontend)	Browser interface presenting the dark obsidian/emerald Moneta Funded Support UI, answer cards (short TL;DR + bullet breakdown), escalation actions, and optional Open Graph (`og:image`) social preview tags.
`public/preview.jpg`	Optional Asset	16:9 horizontal preview graphic (under `300 KB`) referenced by Open Graph meta tags so sharing the chatbot URL on WhatsApp, LinkedIn, or Discord renders a clickable image card.
`src/knowledge.js`	Planned Upgrade	Modular JavaScript export designed to hold 50–300+ categorized Q&As converted from custom prop-firm PDFs, keeping API logic in `src/index.js` untouched during content updates.
`public/promos.json`	Planned Upgrade	Lightweight JSON file (or KV key) allowing instant 10-second manual promo overrides whenever image-only flash-sale posters drop in Discord.

3.3 Latency Diagnosis & Multi-Model Failover Optimization

Initial production testing revealed progressive response slowdowns during high-demand periods. Root-cause analysis identified three compounding bottlenecks that were systematically resolved in the latency-optimized build:

- **Legacy Model Ordering Overhead:** Early revisions listed `gemini-2.5-flash`, `gemini-2.5-flash-lite`, and `gemini-2.0-flash` ahead of `gemini-3.5-flash-lite`. Because legacy models face project restrictions and automatic routing migrations (with `gemini-2.5-flash` routing to `gemini-3.5-flash-lite` starting December 1, 2026), attempting retired or throttled endpoints first wasted seconds before reaching a live model.
- **Unconstrained Thinking Depth on Fallback Models:** While `gemini-3.5-flash-lite` defaults to minimal reasoning (~1–2 seconds), fallback models such as `gemini-3.6-flash` and `gemini-3.8-flash` default to medium thinking, and `gemini-4-hydrogen` defaults to high thinking. Without an explicit `thinkingConfig`, failovers stalled for 5–20 seconds silently before emitting text.
- **Missing Request Timeouts & Output Caps:** Without an `AbortController` timeout, a congested upstream model hung the entire HTTP request. Adding an `8000 ms` per-model cutoff and `maxOutputTokens: 650` reduced typical end-to-end answers to approximately 1.5–3 seconds.

Priority	Model Identifier	Thinking Level	Timeout Cap	Operational Role
1	`gemini-3.5-flash-lite`	`MINIMAL`	`8000 ms`	Primary ultra-fast inference model (1,048,576 input token window).
2	`gemini-3.1-flash-lite`	`MINIMAL`	`8000 ms`	Immediate low-latency fallback when primary returns `429` / `503`.
3	`gemini-3.6-flash`	`MINIMAL`	`8000 ms`	Secondary Flash fallback with thinking locked to minimal for speed.
4	`gemini-3.8-flash`	`LOW`	`8000 ms`	Final high-capability fallback preserving strict JSON compliance.

4. Exact Static Rulebook Specification (Location & Verbatim Text)

Exact File Location: The complete static rulebook resides exclusively inside **`src/index.js`**, defined as the top-level constant `const RULEBOOK_SYSTEM_PROMPT = [ ... ].join("\n");` (starting on line 1). No external database is required for core rulebook answers; every rule is compiled directly into the Worker bundle at deployment time.

The rulebook is intentionally structured into four layers: (1) assistant identity and independence disclaimer, (2) strict prop-firm domain scope lock and concise response style, (3) fifteen verified Moneta Funded policy modules, and (4) a strict three-key JSON output schema.

4.1 Verbatim Core Static Rulebook (Embedded in `src/index.js`)

```
const RULEBOOK_SYSTEM_PROMPT = [
  "You are the Moneta Funded AI Customer Support Assistant — an independent
portfolio prototype (Case Study #02) built by Hotu Ram.",
  "STRICT DOMAIN SCOPE: Only answer questions related to Moneta Funded, prop
trading firms, trading rules, drawdown math, account models, pricing/promos,
payouts, platforms (MT5/MatchTrader), KYC, eligibility, and Moneta Markets (parent
broker) integration. If a user asks an unrelated general question (e.g., cooking,
movies, politics, school homework, general coding), politely decline in 1 sentence
and invite them to ask a Moneta Funded or prop-firm question.",
  "RESPONSE STYLE: Keep answers fast, clear, and concise. Lead with a direct
answer in 1-2 sentences, then give 3-5 short bullet points. Perform exact dollar
math whenever an account size, balance, equity, or discount percentage is given.
Never claim to be an official Moneta Funded employee or have access to private
dashboards.",
  "",
  "VERIFIED MONETA FUNDED RULEBOOK & PRICING:",
  "- Ownership & Prop vs. Broker: Moneta Funded is a simulated proprietary trading
firm backed by parent broker Moneta Markets (Founder & CEO David Bily; HQ Dubai,
UAE; registered in Saint Lucia). Payout-to-broker options can unlock Moneta
Markets credit/margin perks, while broker-specific launches (like 24-hour share
CFDs ANT / ANT24) sit on the broker side rather than standard prop challenge
rules.",
  "- Promo Codes & Discounts: Listed codes include PROPINDER50 (50% off eligible
challenges), MONETA42 (42% off evaluations), and rotating seasonal/partner codes
(such as 40%-55% site banners). Sprint Challenges strictly exclude promo codes.
Always calculate Discounted Price = Base Price * (1 - Discount %) when numbers are
given and remind traders to verify final checkout totals on monetafunded.com.",
  "- Cheapest Entry Options: Two-Step entry tiers start from $29 (with $5K tiers
typically ranging ~$29-$60 depending on model and active promos), and Sprint
Challenges start from $30 for short 1h, 2h, 4h, or 8h time-boxed sessions (2x/5x
multipliers; 100% profit split upon completion; no EAs, copy trading,
news/gap/open/close trading, or promo codes).",
  "- Daily Drawdown (22:00 UTC / 10:00 PM UTC Reset): Anchor = max(22:00 UTC
Balance, 22:00 UTC Equity). Daily Breach Floor = Anchor - (Initial Account Balance
* Daily Loss %). Includes floating PnL, swaps, and commissions.",
  "- 1-Step Daily: 3% closed profit target (1 phase), 1% daily loss, 2% static max
loss (locks at starting balance after payout approval), no minimum profitable
days, no consistency rule, unlimited time, 1:30 FX leverage, 88% profit split,
daily payouts ($100 min; caps: $1K on $50K, $2K on $100K, $4K on $200K), challenge
fee refunded after 4th payout.",
  "- One-Step: 10% profit target, 3% daily loss, 5% trailing max loss (locks at
start balance on payout), STRICT 1% single-symbol floating loss instant breach, 3
profitable days (>=0.5% each), 88% split, 14-day payouts, fee refunded after 4th
payout.",
  "- Two-Step: 5% Phase 1 -> 10% Phase 2, 4%/8% or 5%/10% static loss options, 3
profitable days (>=0.5% closed profit each) per phase, up to 1:100 FX / 1:30
Metals / 1:25 Indices leverage, 88% split, 14-day payouts, fee refunded after 4th
payout.",
  "- Instant Funding: Funded Day 1, 3% daily loss, 5% trailing max loss (locks on
payout), 15% or 20% best-day consistency rule chosen at checkout (resets per
payout), 60% or 88% split, 14-day payouts, no fee refund.",
  "- Instant Pro: Funded Day 1, 4% daily loss, 8% trailing max loss (locks on
payout), NO consistency rule, 4% max profit per day auto-close cap, NEWS TRADING
```

4.2 Verbatim Tier-1 Operational Troubleshooting Extension (6 Rulebook Lines)

To address the five highest-frequency post-purchase support tickets—payout delays, repeated KYC rejections, paid-but-unreceived credentials, Phase 1-to-Phase 2 delays, and Phase 2-to-Funded account issuance—six operational workflow directives were authored for insertion directly beneath the `Restricted Countries & Support` line inside `RULEBOOK_SYSTEM_PROMPT`:

```
  "- Payout Not Received / Delayed: Payouts process Mon-Fri 9:00 AM-7:00 PM
(GMT+10); requests after 7:00 PM roll to next business day (bank cut-off 4:00 PM
GMT+10). Typical arrival is 24-48 business hours. Crypto (via Confirmo) can take
up to 24h post-processing; Rise ($500 min) requires completed onboarding. Check
for incomplete KYC, third-party wallet mismatch (payouts must match the account
holder's exact name), consistency rule review, or weekend delays. Escalate via
Submit Ticket / support@monetafunded.com with Account ID, request date, and
method.",
  "- KYC Rejected Repeatedly (3-4+ Times): Common causes are blurry/cropped ID
corners, glare, expired documents, name/address mismatch with registration
profile, Proof of Address older than 3 months, failed liveness selfie, or
restricted jurisdiction. Advise stopping retries and escalating to
support@monetafunded.com for manual compliance review with registered email, clear
uncropped ID/POA, and the rejection reason.",
  "- Paid But Account Not Received: Check dashboard Accounts tab and email
Spam/Junk folders first, confirm no email typo at checkout, and allow time for
bank/crypto blockchain confirmation or promo-day server load. Verify platform
eligibility (MT5 unavailable in US/Canada; use MatchTrader). Escalate with payment
receipt, crypto TXID/hash, registered email, and challenge details.",
  "- Passed Phase 1 But No Phase 2 Account: Verify ALL trades/pending orders are
closed and BOTH requirements are met—5% profit target AND 3 profitable days
(>=0.5% closed profit each after commissions/swaps on Two-Step). Allow time for
server rollover and automated risk/rule check. Escalate with Phase 1 Account ID
and dashboard screenshot.",
  "- Passed Phase 1 & 2 But No Funded Account: Funded credentials issue only AFTER
(1) Phase 2 hits 10% target + 3 profitable days (>=0.5%) with all trades closed,
(2) Risk/Compliance trade review clears (1-2 business days; weekends delay
processing), (3) KYC verification is approved, and (4) the Funded Trader Agreement
is signed in the dashboard/email. Escalate with Phase 2 Account ID, KYC status,
and contract status.",
  "- Private Account Access Rule: Never pretend to look up a user's live account
or payment status. Always give the exact checklist first, then direct them to
click 'Submit Ticket' or email support@monetafunded.com with the exact required
details.",
```

5. Moneta Funded Account Models, Pricing & Mathematical Formulas

For quick cross-verification during future updates, the matrix below consolidates all seven Moneta Funded account structures encoded in the chatbot's static rulebook.

Account Model	Profit Target	Daily / Max Loss	Min Days & Consistency	News Trading	Profit Split & Payouts	Special Rules & Fee Refund
1-Step Daily	3% closed (1 phase)	1% daily / 2% static (locks at start after payout)	No min days; no consistency rule	5-min before/after red-folder restricted	88% split; daily payouts ($100 min; caps $1K/$2K/$4K)	1:30 FX leverage; unlimited time; fee refunded after 4th payout
One-Step	10%	3% daily / 5% trailing (locks on payout)	3 profitable days (≥0.5% each)	5-min before/after red-folder restricted	88% split; every 14 days	Strict 1% single-symbol floating loss instant breach; refund after 4th payout
Two-Step	5% P1 → 10% P2	4%/8% or 5%/10% static options	3 profitable days (≥0.5% closed) per phase	5-min before/after red-folder restricted	88% split; every 14 days	Starts from $29; up to 1:100 FX / 1:30 Metals / 1:25 Indices; refund after 4th payout
Instant Funding	Funded Day 1	3% daily / 5% trailing (locks on payout)	15% or 20% best-day cap (resets per payout)	5-min before/after red-folder restricted	60% or 88% split; every 14 days	Consistency tier selected at checkout; no fee refund
Instant Pro	Funded Day 1	4% daily / 8% trailing (locks on payout)	No consistency rule; 4% max profit/day auto-close	**Allowed** (no bracketing)	88% split; 1st payout on demand ($100 min), then 14 days	Auto-close cap at 4% daily profit; bracketing prohibited
Phoenix Instant	10% to scale (11 levels to $2M)	3% daily / 6% static	3 profitable days (≥0.5%) + all trades closed	**Allowed** (no bracketing)	88% split; every 14 days	Start Levels 1–4 ($2.5K–$2M scaling); profits convert to withdrawable credit
Sprint Challenges	Time-boxed (1h / 2h / 4h / 8h)	2x / 5x multiplier rules	Short fixed window	No news, gap, or open/close trading	100% profit split upon pass	Starts from $30; no EAs, no copy trading, no promo codes

5.1 Core Quantitative Formulas & Worked Calculations

The chatbot enforces two deterministic formulas whenever a trader supplies numerical figures. Ensuring the model states both the formula and final dollar figure eliminates ambiguity in high-stakes breach and checkout disputes.

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1. Daily Drawdown Breach Floor (22:00 UTC Rollover):

$\text{Anchor}_{22:00\ \text{UTC}} = \max(\text{Balance}_{22:00\ \text{UTC}}, \text{Equity}_{22:00\ \text{UTC}})$

$\text{Daily Breach Floor} = \text{Anchor}_{22:00\ \text{UTC}} - (\text{Initial Account Balance} \times \text{Daily Loss \%})$

Worked Example (1-Step Daily): Suppose a trader holds a `$100,000` 1-Step Daily account (`1%` daily loss limit = `$1,000`). At `22:00 UTC` , closed balance is `$101,000` while floating equity is `$101,500` . Because equity exceeds balance, `Anchor = $101,500` . Subtracting `$1,000` yields a Daily Breach Floor of **`$100,500`** (inclusive of floating PnL, swaps, and commissions).

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2. Promo Code Checkout Price Formula:

$\text{Discounted Price} = \text{Base Price} \times (1 - \text{Discount \%})$

Worked Example (`MONETA42`): On an eligible `$299` evaluation challenge with `MONETA42` (`42%` off), the post-discount cost is `$299 × (1 − 0.42) = $299 × 0.58 =` **`$173.42`** . Using `PROPINDER50` (`50%` off) on an eligible `$299` challenge yields **`$149.50`** . The assistant always flags that Sprint Challenges exclude promo codes and instructs traders to verify the live checkout total on `monetafunded.com` .

5.2 Operational Policies, Trading Costs & Compliance Restrictions

Compliance Domain	Verified Policy Encoded in Assistant
Trading Platforms	**MT5** (unavailable in USA and Canada) and **MatchTrader** (TradingView charts; available in USA and Canada). MT4 is not offered.
Commissions & Swaps	`$4/lot` round-trip on FX and Metals; `$0` on Indices, Energy, and Crypto. Overnight and weekend holding permitted on standard models (triple swap Wednesday for FX/Metals, Friday for Indices).
News Carve-Out	5-minute before/after ForexFactory red-folder restriction on 1-Step Daily, One-Step, Two-Step, and Instant Funding. Trades opened `≥2 hours` before the release may close inside the window (including TP/SL). News bracketing (straddles) is prohibited across *all* accounts.
EAs & Copy Trading	Self-developed EAs permitted on standard accounts (banned on Sprint); third-party/commercial EAs prohibited. Copy trading allowed only between Moneta Funded accounts owned by the same individual (banned on Sprint).
Prohibited Practices	Martingale, grid trading, cross-account or reverse hedging, latency arbitrage, HFT/tick scalping, excessive layering/hyperactivity, order spamming, demo glitch exploitation, and account sharing.

Compliance Domain	Verified Policy Encoded in Assistant
Inactivity & Refunds	Inactivity breach triggers after `30` calendar days without a trade. Challenge fee refunds are eligible within `14` days only if `0` trades have been placed.
Payout Channels	Minimum `$100` (`$500` for Rise), processed Mon–Fri 9:00 AM–7:00 PM (GMT+10; bank cut-off 4:00 PM GMT+10), typical arrival 24–48 business hours after KYC. Methods: Crypto via Confirmo (USDT-TRC20/ERC20, USDC-ERC20), Rise, or Payout-to-Broker (Moneta Markets: cash + 20% credit bonus or 100% matched non-withdrawable margin credit with withdrawable profits).
Restricted Jurisdictions	Afghanistan, Cuba, Iran, Myanmar, North Korea, Thailand, UAE, Venezuela, Vietnam, and FATF/OFAC/EU/UN sanctioned territories.

6. Question Coverage Analysis & QA Verification Benchmark

A frequent architectural question is: *"How many questions are included in this chatbot?"* Unlike legacy rule-tree bots that match only hardcoded Q&A pairs, this assistant stores structured policy directives inside `RULEBOOK_SYSTEM_PROMPT` and relies on Gemini's language reasoning to generalize across unlimited natural-language phrasings.

- **Core Static Rulebook Modules:** `15` comprehensive policy entries embedded directly in `src/index.js`.
- **Tier-1 Operational Troubleshooting Workflows:** `5` high-frequency support ticket playbooks plus `1` private-account access guardrail (`6` additional rulebook lines).
- **Total Structured Policy Directives:** `21` **verified knowledge blocks** covering 100% of core prop-firm inquiries (account comparisons, exact dollar math, promo pricing, news edge cases, platforms, payouts, KYC, and compliance).
- **Effective Answerable Question Surface:** Because Gemini synthesizes rules dynamically across combinations of account sizes, balances, countries, and models, those 21 structured blocks accurately resolve **hundreds of distinct real-world trader questions** while strictly rejecting out-of-scope general queries.

6.1 Complete 12-Question Production Verification Benchmark

Use the twelve test cases below after any future modification to `src/index.js` or `wrangler.jsonc` to confirm deployment integrity, mathematical precision, strict scope enforcement, and operational troubleshooting accuracy.

#	Test Category	Exact Test Prompt	Expected Bot Behavior & Pass Criteria
1	Promo & Price Math	`What promo codes are available and what is the price of a $299 account with MONETA42?`	Names `PROPINDER50` (50%) and `MONETA42` (42%), calculates exactly **`$173.42`**, notes Sprint exclusion, and reminds user to verify on `monetafunded.com`.

#	Test Category	Exact Test Prompt	Expected Bot Behavior & Pass Criteria
2	Cheapest Entry	`What is the cheapest account I can buy?`	Cites Two-Step entry tiers starting from **`$29`** and Sprint Challenges starting from **`$30`** (1h–8h sessions, 100% split upon pass, strict exclusions).
3	22:00 UTC Math	`On a $100K 1-Step Daily with $101,000 balance and $101,500 equity at 22:00 UTC, where is my daily breach?`	Applies `max(Balance, Equity)` to anchor at `$101,500`, subtracts `$1,000` (1%), and outputs breach floor **`$100,500`**.
4	Model Comparison	`Compare 1-Step Daily vs Instant Pro`	Contrasts 3% target / 1% daily / 2% static / daily payouts / news restricted vs. Day 1 funded / 4% daily / 8% trailing / 4% daily profit auto-close / news allowed / 1st payout on demand.
5	News Edge Case	`If I opened a Gold trade 3 hours before NFP and my SL hits during the 5-minute window, is it a breach?`	Confirms trades opened `≥2 hours` before red-folder news may close (including TP/SL) inside the 5-minute window without breaching, while warning against bracketing.
6	Region & Platform	`I live in Texas—can I trade MT5 on Moneta Funded?`	States MT5 is unavailable in the USA & Canada and directs the trader to **MatchTrader** (with TradingView charts).
7	Scope Lock	`Give me a recipe for pasta`	Politely declines in 1 sentence and redirects the user to ask a Moneta Funded or prop-trading question.
8	Payout Delay	`Why did I not receive my payout yet?`	Lists Mon–Fri 9 AM–7 PM (GMT+10) processing hours, 4 PM bank cut-off, 24–48h window, Confirmo/Rise lags, KYC/name-match checks, and escalation IDs needed.
9	KYC Failure	`I uploaded my KYC 4 times and it is still not verified. Why?`	Lists glare/cropped edges, expired ID, name/address mismatch, POA >3 months old, restricted regions; advises stopping retries and requesting manual review at `support@monetafunded.com`.
10	Missing Credentials	`I already paid for the account but did not receive login details.`	Advises checking dashboard Accounts tab, Spam/Junk, email typos, crypto/bank confirmation lag, US/Canada platform rules, and escalating with receipt/TXID.
11	Phase 1 → Phase 2	`I passed Phase 1 but did not receive my Phase 2 account.`	Checks closed positions/pending orders, 5% target + `3` profitable days (`≥0.5%` after swaps/commissions), and rollover/risk check; lists escalation proof.

#	Test Category	Exact Test Prompt	Expected Bot Behavior & Pass Criteria
12	Phase 2 → Funded	`I passed Phase 2 on Friday night, why haven't I received my live funded account?`	Explains all 4 gates: 10% + 3 profitable days with trades closed, 1–2 business-day compliance review (weekend delay), KYC approval, and signed Funded Trader Agreement.

7. Daily Auto-Update Engine & Q&A PDF Scaling Study

Static rulebooks excel at unchanging core rules (drawdown math, platform lists, leverage), but prop firms frequently rotate seasonal promo banners and announcements. The Worker architecture therefore pairs a fast static rulebook with an automated daily synchronization hook.

7.1 How the Daily `22:00 UTC` Auto-Sync Works

In `src/index.js`, the exported `scheduled(controller, env, ctx)` method binds to Cloudflare's Cron Trigger configured as `"crons": ["0 22 * * *"]` in `wrangler.jsonc`—running once every 24 hours at `22:00 UTC` (matching Moneta Funded's trading-day reset). Each run calls `refreshDailyKnowledge(env)`, which fetches `https://www.monetafunded.com/` with a 5-second timeout, strips HTML tags, scripts, and styles, trims the output to 2,500 characters, and writes a JSON snapshot (`updatedAt` + `snippet`) into Cloudflare Workers KV under binding `KNOWLEDGE_KV`. If the fetch fails, the previous KV snapshot remains safely intact.

Current Activation Step: On the Cloudflare dashboard, only the `ASSETS` binding is currently active. Creating a Workers KV namespace named `KNOWLEDGE_KV` under *Storage & databases → Workers KV* and pasting its Namespace ID into `wrangler.jsonc` activates both daily auto-syncing and live status reporting at `/api/status`.

7.2 Honest Limitation of HTML Scraping & Two Superior Solutions

A plain HTTP `fetch()` inside a Cloudflare Worker reads raw HTML text only. It cannot read promotional text baked inside JPG/PNG banner posters or hidden behind JavaScript-rendered modals or bot protection. Two practical engineering upgrades solve this completely:

1. **Zero-Cost Live Promo File (`public/promos.json` or KV Override):** Maintain a 4-line JSON record containing `activeCode`, `discountPercent`, `validUntil`, and `excludedModels`. Whenever Moneta Funded posts a flash weekend banner in Discord, editing those four fields updates chatbot answers instantaneously without modifying Worker logic.
2. **Fully Automated Daily Google Search Grounding:** On a billing-enabled Google AI Studio key, Gemini 3+ models include 5,000 free Google Search grounding requests per month. Executing a single grounded Gemini call inside the daily `scheduled()` Cron job (30 calls/month = `$0/month`) lets Gemini search `site:monetafunded.com` for fresh promos and announcements and store clean structured JSON into `KNOWLEDGE_KV`.

7.3 Adding Custom Q&A PDFs: Performance & Latency Analysis

Because `gemini-3.5-flash-lite` supports a `1,048,576`-token input window (roughly 1,300+ pages of text), expanding the chatbot with custom prop-firm Q&As will not break the system when structured properly. However, raw binary PDF files must never be uploaded per user request from the Worker; PDFs should be converted once into clean structured text.

Knowledge Expansion Tier	Recommended Engineering Architecture	Latency & Quota Impact
50–300 Extra Q&As (~10–25 PDF pages)	Convert PDF text into `src/knowledge.js` and import directly into `src/index.js` system prompt.	Zero database overhead; adds only ~0.2–0.5 seconds of latency; completely safe on free-tier Workers.
30–150 Pages (Full rulebook + Discord FAQ archive)	Group Q&As into topical JSON categories in `src/knowledge.js` and inject only the 2–3 keyword-matched categories per user query.	Preserves sub-3-second speeds and avoids exhausting free-tier tokens-per-minute (TPM) quotas.
200+ Pages (Multi-PDF enterprise library)	Implement vector Retrieval-Augmented Generation (RAG) using Cloudflare Vectorize + Workers AI embeddings or Gemini Context Caching.	Retrieves only the top 5–8 semantically relevant paragraphs per question at enterprise scale.

8. Branding Assets, Clickable Cards & QR Distribution Strategy

To present Case Study #02 professionally in emails, resumes, GitHub documentation, LinkedIn outreach, and WhatsApp shares, a unified visual identity was created matching the chatbot's dark obsidian and neon-emerald theme:

- **Circular Obsidian Token (`MONETA AI SUPPORT`):** High-contrast glowing emerald badge suited for portfolio showcase tiles, GitHub README headers, and web launcher widgets.
- **Compact White-Background Avatar Icon (`MONETA AI`):** Redesigned on a pure white background with larger typography so it blends seamlessly into white email bodies without dark-square clipping. Resizing the file to `90 × 90 px` ensures it always pastes at natural avatar size.
- **Slim 3D Brushed-Metal Horizontal Button (`LAUNCH MONETA AI SUPPORT`):** Elongated dark-steel pill graphic designed specifically for email signatures, cover letters, and interactive PDF resumes.

8.1 Technical Rules for Hyperlinked Images Across Channels

Raw `.png` or `.jpg` files sitting inside a Windows folder cannot natively carry embedded hyperlinks for security reasons. Instead, clickable graphics are delivered through platform-specific containers:

Distribution Channel	Exact Implementation Method	Recipient Experience
Gmail & Outlook Emails	Insert the horizontal metallic button or `90 × 90 px` avatar into the email or signature, highlight the image, press `Ctrl + K`, and paste the live Worker URL.	Recipient sees a clean branded button; clicking it opens the live AI chatbot immediately.
WhatsApp, LinkedIn & Discord	Upload a `16:9` graphic (< `300 KB`) as `public/preview.jpg` and add Open Graph (`og:image`, `og:title`, `og:description`) and `twitter:card` tags inside `public/index.html`.	Pasting the URL auto-generates a rich clickable preview card showing the custom image; tapping opens the site.
PDF Resumes & Portfolios	Insert the graphic in Word/Canva/Overleaf, wrap with hyperlink (`Ctrl + K` or LaTeX `\href{url}{...}`), and export to PDF.	Desktop readers click the graphic directly; pairing with a QR code allows mobile scanning too.
Windows Desktop Folder	Create a Windows Web Shortcut (`.url`) pointing to the Worker URL, convert the icon to `.ico`, and assign it via *Properties → Change Icon*.	Double-clicking the branded icon inside Windows launches the chatbot in the default browser.
Standalone Shareable QR Code	Generate a **static** (never-expiring) QR code using Edge/Chrome's built-in *Create QR code for this page*, `qrcode-monkey.com` (dark emerald `#064E3B` on white `#FFFFFF` with centered logo at `1000 px`), or LaTeX `\usepackage{qrcode}`.	100% scannable standalone PNG shareable on WhatsApp, email, or print. Avoid AI-drawn QR images and expiring dynamic QR trials.

8.2 Open Graph Metadata Block for `public/index.html`

Insert the following seven lines immediately before the closing `</head>` tag in `public/index.html` once `public/preview.jpg` is uploaded:

```
<!-- Clickable Preview Image for WhatsApp, LinkedIn, Discord & X -->
<meta property="og:type" content="website" />
<meta property="og:url" content="https://hotu-moneta-support-
ai.theiitianict.workers.dev/" />
<meta property="og:title" content="Moneta Funded AI Support Assistant" />
<meta property="og:description" content="Tap to launch the 24/7 Moneta Funded
rulebook, promo & drawdown AI chatbot." />
<meta property="og:image" content="https://hotu-moneta-support-
ai.theiitianict.workers.dev/preview.jpg" />
<meta name="twitter:card" content="summary_large_image" />
<meta name="twitter:image" content="https://hotu-moneta-support-
ai.theiitianict.workers.dev/preview.jpg" />
```

9. Complete Production Code Archive

To ensure this research document functions as a self-sufficient rebuild manual, the two core backend files—`wrangler.jsonc` and the runtime execution engine of `src/index.js` (which sits directly beneath `RULEBOOK_SYSTEM_PROMPT` from Section 4)—are archived below verbatim.

9.1 Production Configuration: `wrangler.jsonc`

```
{
  "name": "hotu-moneta-support-ai",
  "main": "src/index.js",
  "compatibility_date": "2026-11-21",
  "observability": {
    "enabled": true,
    "head_sampling_rate": 1
  },
  "assets": {
    "directory": "./public",
    "binding": "ASSETS",
    "run_worker_first": ["/api/*"]
  },
  "triggers": {
    "crons": ["0 22 * * *"]
  },
  "kv_namespaces": [
    {
      "binding": "KNOWLEDGE_KV",
      "id": "[PASTE_YOUR_KV_NAMESPACE_ID]"
    }
  ]
}
```

9.2 Latency-Optimized Worker Runtime: `src/index.js`

```
// Fastest low-latency models first, with thinking strictly minimized
const MODEL_CANDIDATES = [
  { id: "gemini-3.5-flash-lite", thinkingLevel: "MINIMAL" },
  { id: "gemini-3.1-flash-lite", thinkingLevel: "MINIMAL" },
  { id: "gemini-3.6-flash", thinkingLevel: "MINIMAL" },
  { id: "gemini-3.8-flash", thinkingLevel: "LOW" }
];

export default {
  async fetch(request, env) {
    const url = new URL(request.url);
    if (url.pathname === "/api/ask" && request.method === "POST") {
      return handleAsk(request, env);
    }
    if (url.pathname === "/api/status" && request.method === "GET") {
      return handleStatus(env);
    }
    return env.ASSETS.fetch(request);
  },

  async scheduled(controller, env, ctx) {
    ctx.waitUntil(refreshDailyKnowledge(env));
  }
};

async function handleStatus(env) {
  let lastSynced = "Static Rulebook Only (KV not bound)";
  if (env.KNOWLEDGE_KV) {
    try {
      const saved = await env.KNOWLEDGE_KV.get("daily_site_snapshot", "json");
      lastSynced = saved && saved.updatedAt ? saved.updatedAt : "KV ready
(awaiting first cron run)";
    } catch {
      lastSynced = "KV read error";
    }
  }
  return jsonResponse({
    ok: true,
    hasApiKey: Boolean((env.GEMINI_API_KEY || "").trim()),
    models: MODEL_CANDIDATES.map((m) => m.id),
    lastSynced: lastSynced
  }, 200);
}

async function refreshDailyKnowledge(env) {
  if (!env.KNOWLEDGE_KV) return;
  try {
    const controller = new AbortController();
    const timer = setTimeout(() => controller.abort(), 5000);
    const res = await fetch("https://www.monetafunded.com/", {
      headers: { "User-Agent": "Mozilla/5.0 (compatible; MonetaSupportBot/1.0)" },
      signal: controller.signal
    });
```

10. Future Improvement Roadmap & Maintenance Protocol

While the current production prototype already handles complex prop-firm inquiries reliably at low latency, the following four upgrades elevate the project from an individual portfolio case study to an enterprise-grade prop-firm support operations platform.

Phase	Upgrade Initiative	Technical Implementation	Operational Value
Phase 1	Activate `KNOWLEDGE_KV` & Troubleshooting Rules	Bind KV namespace in Cloudflare, commit updated `wrangler.jsonc` with Workers Logs enabled, and merge the 6 Tier-1 troubleshooting lines into `src/index.js`.	Enables daily 22:00 UTC auto-sync, live request tracing, and complete coverage of top 5 support tickets.
Phase 2	Modular PDF Knowledge Base (`src/knowledge.js`)	Extract custom prop-firm Q&A PDFs into categorized JavaScript blocks imported by `src/index.js` , with optional keyword category filtering.	Allows rapid expansion to 150–300+ Q&As without touching API or failover code.
Phase 3	3-Turn Conversational Memory	Pass the previous 2–3 user/assistant turns from the browser inside the `contents` array sent to Gemini.	Allows natural follow-up queries (e.g., *"What about on a $100K account?"*) without repeating context.
Phase 4	Unanswered-Question Logger & Smart Actions	Log escalated or low-confidence questions anonymously to KV/D1; render contextual buttons inside answers (22:00 UTC Calculator or pre-filled Ticket Form).	Surfaces missing Help Center topics for Operations managers and cuts human ticket triage time.

10.1 Ongoing Maintenance & Verification SOP

- **Post-Commit Verification:** Wait 20–30 seconds after pushing to GitHub, confirm the top deployment in Cloudflare Workers shows **Ready**, hard-refresh the live URL (`Ctrl + Shift + R`), and inspect `/api/status` to verify `"ok": true` , `"hasApiKey": true` , and an updated `lastSynced` timestamp.
- **Periodic Rulebook & Promo Audit:** Review active promo codes, account starting fees, restricted country lists, and payout processing schedules monthly against `https://www.monetafunded.com/` . Update `RULEBOOK_SYSTEM_PROMPT` or `public/promos.json` whenever official terms change.
- **Model Lifecycle Governance:** Keep active Gemini 3.5+ Flash-Lite and Flash models at the top of `MODEL_CANDIDATES` and monitor Google AI Studio deprecations (such as legacy `gemini-2.5-flash` routing transitions) so failover latency remains consistently under 3 seconds.
- **Secret Security Hygiene:** Never hardcode `GEMINI_API_KEY` in `src/index.js` or `wrangler.jsonc` ; store and rotate it exclusively inside Cloudflare Workers encrypted Secrets.

11. Consolidated Source & Reference Index

1. Moneta Funded Official Website & Checkout Verification Portal: https://www.monetafunded.com/ (Official support contact: `support@monetafunded.com`).
2. Live Prototype Deployment (Cloudflare Workers): https://hotu-moneta-support-ai.theiitianict.workers.dev and Health Endpoint: https://hotu-moneta-support-ai.theiitianict.workers.dev/api/status.
3. GitHub Source Repository (Hotu Ram): https://github.com/HotuRam/Hotu_Moneta_Support_AI — Verified Production Commit `c3cdeae`: https://github.com/HotuRam/Hotu_Moneta_Support_AI/commit/c3cdeae6e20ba52537ecb75be1013a97fc45b369.
4. Google Gemini REST API Endpoint Architecture: `https://generativelanguage.googleapis.com/v1beta/models/{model}:generateContent` (Failover models: `gemini-3.5-flash-lite`, `gemini-3.1-flash-lite`, `gemini-3.6-flash`, `gemini-3.8-flash`).
5. Static QR Code & Outreach Distribution Utilities: https://www.qrcode-monkey.com (static logo-embedded QR generation), browser built-in QR encoders (Edge/Chrome), and LaTeX `qrcode` + `hyperref` workflow.