DESIGN DOCUMENT

Profit-First Ad Manager (PFAM)

UI/UX Design System · Screen Specifications · Interaction Patterns · System Design

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Field	Value
Product	Profit-First Ad Manager (PFAM)
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Covers	Design System, All Core Screens, Interactions, Responsive, Accessibility

1. Design Introduction

1.1 Purpose of This Document

This Design Document is the single source of truth for all visual and interaction design decisions for PFAM. It covers the design system (tokens, typography, color, components), screen-by-screen UX specifications, key interaction patterns, data visualization guidelines, and accessibility requirements. Engineers, designers, and QA should reference this document when building or reviewing any front-end element.

1.2 Design Goals

Simplicity Over Features
• Every screen must be understood by a non-technical founder in 5 seconds.
• Complexity is hidden under progressive disclosure.
• Default views show only what is needed to make a decision.
• Advanced options are accessible but never in the way.

Profit as the Primary Signal
• Net profit is the dominant visual element on every screen.
• ROAS and revenue are shown for context, never as primary.
• Red/amber/green is the universal language — no legend needed.
• Numbers are secondary to directional signals.

Trust Through Transparency
• Every number shows how it was calculated.
• Confidence levels are visible, not hidden.
• Every automated action shows its reason.
• Undo is always one click away.

Speed as a Feature
• Dashboard load < 2.5 seconds always.
• Actions feel instant with optimistic UI updates.
• Onboarding never blocks — show partial data early.
• Mobile must feel as fast as desktop.

1.3 Design Principles (Hierarchy)

#	Principle	Rationale	When in Conflict…
1	Clarity over Cleverness	A founder at 7am on a phone needs instant comprehension.	Always choose the simpler pattern even if less aesthetically interesting.
2	Accuracy over Completeness	A wrong number is worse than a missing one.	Show confidence levels rather than filling gaps with estimates.

#	Principle	Rationale	When in Conflict…
3	Action over Insight	PFAM must help users do something, not just know something.	Prioritize CTA placement over chart real estate.
4	Consistency over Novelty	Patterns learned once should work everywhere.	Reuse existing components rather than inventing new ones.
5	Mobile Parity over Mobile First	Desktop is primary; mobile is equally important, not an afterthought.	Design desktop first; mobile must have feature parity, not reduced features.

2. Design System

2.1 Color System

PFAM uses a two-track color system: a Neutral Track for structural UI (backgrounds, borders, text) and a Semantic Track for conveying meaning (profit status, confidence levels, actions). Semantic colors must never be used purely decoratively.

2.1.1 Brand Colors

Indigo-900 #312E81	Indigo-600 #4F46E5	Indigo-500 #6366F1	Indigo-300 #A5B4FC	Indigo-100 #E0E7FF	Indigo-50 #EEF2FF

2.1.2 Semantic Colors — Profit Status

Profitable #059669	Profit-bg #D1FAE5	Borderline #D97706	Amber-bg #FEF3C7	Loss #DC2626	Loss-bg #FEE2E2

2.1.3 Neutral Scale

Gray-900 #111827	Gray-700 #374151	Gray-500 #6B7280	Gray-300 #D1D5DB	Gray-100 #F3F4F6	White #FFFFFF

Token Name	Value	Usage
color.background.base	#FFFFFF	Page background, card backgrounds
color.background.subtle	#F8FAFC	Table row alt, sidebar bg, input bg
color.background.muted	#F3F4F6	Skeleton loaders, disabled state bg
color.border.default	#E5E7EB	Default borders, table dividers
color.border.focus	#6366F1	Input focus ring, selected state
color.text.primary	#111827	Headings, primary content
color.text.secondary	#6B7280	Labels, captions, helper text
color.text.disabled	#D1D5DB	Disabled inputs, placeholder text
color.brand.primary	#312E81	Nav, primary buttons, banner backgrounds

Token Name	Value	Usage
color.brand.accent	#6366F1	Links, active states, secondary buttons
color.profit.positive	#059669	Positive profit numbers, success states
color.profit.negative	#DC2626	Negative profit numbers, destructive actions
color.profit.neutral	#D97706	Near-zero profit, warning states

2.2 Typography

Style	Font	Weight	Size	Line Height	Usage
Display	Inter	700 / Bold	32px / 64px tw	1.2	Hero headlines on marketing pages
H1	Inter	700 / Bold	28px / 56px tw	1.3	Page titles, section headers
H2	Inter	600 / SemiBold	22px / 44px tw	1.4	Sub-section headers, card titles
H3	Inter	600 / SemiBold	18px / 36px tw	1.4	Column headers, group labels
Body / Default	Inter	400 / Regular	14px / 28px tw	1.6	Primary body copy, descriptions
Body Strong	Inter	500 / Medium	14px / 28px tw	1.6	Emphasized body text, labels
Body Small	Inter	400 / Regular	13px / 26px tw	1.5	Helper text, captions, metadata
Mono / Code	JetBrains Mono	400	13px	1.5	API keys, IDs, technical values, click IDs
Data / Metric	Inter	700 / Bold	24–36px	1.1	Profit values, KPI numbers in dashboard cards
Badge / Tag	Inter	500 / Medium	12px	1	Status badges, tags, table chips

Typography Rule: Monetary values (Net Profit, Spend, Revenue) always use the "Data/Metric" style with the Semantic color (green/red/amber). Never display a financial metric in a neutral color — the color IS the primary communication.

2.3 Spacing & Layout System

PFAM uses an 8px base grid. All spacing values are multiples of 4px. The application uses a fixed left sidebar navigation with a fluid main content area.

Token	Value	Common Usage
space-1	4px	Icon padding, dense table row padding
space-2	8px	Chip padding, badge padding
space-3	12px	Input padding vertical, small card padding
space-4	16px	Standard component padding, section gap
space-6	24px	Card padding, sidebar item padding
space-8	32px	Section separation, page header padding
space-12	48px	Major section breaks
space-16	64px	Page-level top/bottom padding
radius-sm	4px	Buttons, badges, small chips
radius-md	8px	Cards, dropdowns, popovers
radius-lg	12px	Modal dialogs, large panels
radius-xl	16px	Feature cards, onboarding panels
shadow-sm	0 1px 3px rgba(0,0,0,0.08)	Table rows on hover, secondary cards
shadow-md	0 4px 12px rgba(0,0,0,0.1)	Dropdowns, popovers, floating toolbars
shadow-lg	0 8px 32px rgba(0,0,0,0.12)	Modals, dialogs, side sheets

2.4 Grid System

Breakpoint	Min Width	Layout	Sidebar	Content Width	Notes
Mobile (sm)	< 640px	Single column, no sidebar	Hidden (hamburger)	100vw	Full-width, bottom tab nav
Tablet (md)	640–1024px	Single column + sidebar	Collapsed (icon-only, 64px)	calc(100vw - 64px)	Hover to expand sidebar
Desktop (lg)	1024–1440px	Fixed sidebar + fluid content	Expanded (240px)	calc(100vw - 240px)	Standard layout
Wide (xl)	> 1440px	Fixed sidebar + max-width content	Expanded (240px)	Max 1200px centered	Content caps at 1200px

2.5 Core Component Library

2.5.1 Buttons

Variant	Visual Description	Use Case	Disabled State
Primary	Solid indigo bg (#4F46E5), white text, 8px radius, 40px height	Primary action on a screen (1 per view)	50% opacity, not-allowed cursor, no hover effect
Secondary	White bg, indigo border, indigo text	Secondary actions, cancel	50% opacity, muted border
Destructive	Solid red bg (#DC2626), white text	Delete, remove, disconnect actions	50% opacity, not-allowed cursor
Ghost	No bg, indigo text, hover shows light bg	Tertiary actions, table row actions	50% opacity, no hover
Icon Button	Square (40×40px), ghost style with icon	Toolbar icons, table row controls	50% opacity
Loading State	Primary + spinner replacing label text	When async action is in flight	N/A — shown instead of active

2.5.2 Status Badges

▲ Profitable	● Borderline	▼ Loss	○ No Data	‖ Paused
Net Profit > 0	Profit -10% to 0	Net Profit < -10%	Insufficient orders	Auto or manually paused

2.5.3 Confidence Indicators

Level	Label	Score Range	Color	Attribution Tier	Visual
High	High Confidence	0.85–1.0	Green (#059669)	Tier 1–2 (Click ID / Conversion ID)	Solid green dot
Medium	Medium Confidence	0.60–0.84	Amber (#D97706)	Tier 3–4 (SKU-weighted / Blended)	Amber dot
Low	Low Confidence	< 0.60	Gray (#9CA3AF)	Tier 5 (ML predicted) or insufficient data	Gray dot with warning
Insufficient	No Attribution	< 10 orders	Red outline	Cannot attribute yet	Striped indicator

2.5.4 Metric Cards (KPI Tiles)

Metric Card Specification

Metric cards appear in rows of 4 across the Account Overview dashboard. Each card is 220px wide (fluid on narrow screens), 96px tall, with 16px padding. Structure: [Label text (Body Small, Gray-500)] → [Value (Data/Metric style, semantic color)] → [Delta row: delta arrow + percentage vs previous period (Body Small)]. Cards have a 1px border, 8px radius, white bg, subtle shadow. Hovering a card highlights it and reveals a tooltip showing the exact calculation formula (e.g., "Net Profit = Revenue - Spend - COGS - Returns - Fees").

2.5.5 Data Tables

Property	Specification
Row height	48px (default) / 40px (compact mode)
Column header	Gray-50 bg, Body Strong style, sort icon on hover (all columns), active sort shows arrow
Row hover	Highlight with indigo-50 bg, show row action buttons (icons)
Selected row	Indigo-100 bg, left border 3px indigo
Profit column	Always pinned as first data column after name. Font is Data/Metric style with semantic color.
Pagination	Bottom of table: showing "X–Y of Z results", page size selector (10/25/50/100), previous/next
Empty state	Centered illustration + headline + description + CTA button. No blank whitespace.

Property	Specification
Loading state	Skeleton rows (gray gradient animation) matching table structure
Frozen columns	Campaign Name always frozen-left on horizontal scroll

3. Screen Specifications

3.1 Global Navigation

The left sidebar is the primary navigation. It uses a 240px expanded state with icon + label, and collapses to 64px on tablet with icon only. On mobile, it becomes a bottom tab bar with the 5 primary destinations.

Nav Item	Icon	Route	Badge / Indicator
Overview	Bar chart icon	/dashboard	Unread alerts count
Campaigns	Target icon	/campaigns	Active automation count
Products	Box icon	/products	—
Automation	Lightning bolt	/automation	Paused today count
Reports	Download icon	/reports	—
Settings	Gear icon	/settings	Setup incomplete dot
Account	User avatar	Bottom of sidebar	Billing status warning

Top Bar (12px height, fixed)

Left: Breadcrumb trail (e.g., Campaigns > Meta > Campaign Name). Center: Date Range Selector (persistent, affects all views). Right: [Sync Status chip] [Notifications bell with unread count] [Help icon] [User avatar + org name dropdown]. The date range selector is a persistent global state that applies to all dashboard views. Changing the date range should update all visible metrics within 300ms via cached data.

3.2 Onboarding Flow

The onboarding flow is a 5-step wizard displayed as a centered modal overlay on first login. It is resumable — users can skip to dashboard at any step and the wizard re-appears on next login until completion.

Step	Screen Title	User Action	Success State	Skip Allowed?
1 of 5	Connect your Shopify store	Click "Connect Shopify" → OAuth redirect → return	Green checkmark + store name + order count shown	Yes, skip adds yellow warning banner
2 of 5	Connect your ad accounts	Click Meta button → OAuth. Then optionally Google.	Platform tiles show "Connected" with account name	Yes, but dashboard will show limited data
3 of 5	Configure your COGS	Select method: Shopify import / CSV upload / % estimate	COGS confidence badge shown (High/Medium/Low)	Yes — profit accuracy reduced, shown in warning
4 of 5	Set up your first rule	Pre-fill template: "Pause if 7-day profit < $0 AND orders > 10"	Rule card shows "Draft — ready to activate"	Yes — encouraged to do this in Day 2
5 of 5	You're ready!	Click "Go to Dashboard" or "Activate Rule Now"	Confetti animation, checklist shows 5/5 complete	N/A — final step

> **Onboarding Progress Persistence**
>
> Onboarding state is saved server-side per user. If the user refreshes or closes the browser mid-flow, the wizard reopens at the last incomplete step. The top navigation shows an "Onboarding: 3/5 complete" chip until all 5 steps are done. After completion, the chip disappears permanently.

3.3 Account Overview Dashboard

> **Account Overview**
> /dashboard — The morning dashboard. CEO-friendly. 5-second comprehension.

ZONE A — KPI Row (full width, 4 cards)
Card 1: Total Net Profit (period) — [Large number, semantic color] [Delta vs prior period] [Spark line]
Card 2: Total Ad Spend — [Number, gray] [Delta] [Trend]
Card 3: Blended Net Profit Margin % — [Percentage, semantic color] [Delta]
Card 4: Campaigns Paused Today (by automation) — [Count, blue] [View All link]

ZONE B — Platform Tiles (3 side-by-side)
One tile per connected platform (Meta, Google, TikTok)
Each tile: Platform logo | Spend | Revenue | Net Profit | Profit % | Status chip
Click any tile → drills into that platform's campaign view
Unconnected platforms show a "+ Connect" tile (lighter style)

ZONE C — Campaign Health Heatmap (full width)
Visual grid showing all campaigns as colored tiles sized by spend
Green = profitable, Amber = borderline, Red = loss, Gray = paused

Hover: tooltip with Campaign name, 7-day net profit, last action
Click: navigates to campaign detail

ZONE D — Automation Activity Feed (right sidebar panel)
Timeline of last 10 automated actions (reverse chronological)
Each entry: [Action icon] [Campaign name] [Action] [Time ago]
Entry example: ⏸ "Summer Sale — US" paused • 2 hrs ago • Undo
View All link → navigates to Automation log

ZONE E — Sync Status Bar (bottom, sticky)
Last synced: "Meta: 47 min ago | Google: 1hr 12min ago | Shopify: 23 min ago"
If any sync is stale (> 2hrs): amber chip with warning icon
Sync Now button (rate-limited to once per 5 minutes)

Fig 3.3 — Account Overview Dashboard layout. Zones A–D are always visible on desktop. Zone E is sticky at the bottom.

3.4 Campaign View

Campaign Dashboard
/campaigns — The performance marketer's control center. Sortable by profit, filterable by platform.

ZONE A — View Controls (toolbar)
Left: Platform filter pills (All | Meta | Google | TikTok)
Left: Status filter (All | Active | Paused | Borderline | Loss)
Left: Attribution confidence filter (All | High | Medium | Low)
Right: Columns selector (show/hide columns) | Compact/Default toggle | Export CSV | Export PDF
Right: Saved Views dropdown + Save Current View button

ZONE B — Summary Row (sticky sub-header)
Aggregated totals row across all filtered campaigns
Columns: Total Spend | Total Revenue | Total COGS | Total Returns | Total Net Profit | Blended Margin
Shows "(123 campaigns)" count

ZONE C — Campaign Table (primary content)
Columns: [Profit Status badge] [Platform icon] [Campaign Name (frozen)] [Spend] [Revenue] [COGS] [Returns] [Fees] [Net Profit $] [Net Profit %] [True ROAS] [Attr. Confidence] [Orders] [Status] [Actions]
Default sort: Net Profit ascending (worst performers first)
Net Profit column: colored number + background tint (green/amber/red)
Attribution Confidence column: dot indicator + tier label
Actions column: [View details] [⏸ Pause] [▶ Resume] [+ Add Rule] icons
Row expansion: click chevron → shows ad set breakdown inline

ZONE D — Right Panel (slide-in on row click)
Opened by clicking campaign row (not action buttons)
Shows: Profit breakdown chart | Attribution breakdown | 7/14/30-day trend
Tabs: Overview | Ad Sets | Attribution | Rules | Audit Log
Close button (X) or click outside to dismiss

3.4.1 Profit Breakdown Panel

When a user opens the right panel for a campaign, the Profit Breakdown tab shows a stacked horizontal bar chart breaking down how each cost component reduces revenue to net profit. Structure:

- Full width = Attributed Revenue (100% = baseline)
- Segments: Revenue → [minus] Ad Spend → [minus] COGS → [minus] Estimated Returns → [minus] Fees → [equals] Net Profit
- Each segment is color-coded: Revenue (blue), Spend (red), COGS (orange), Returns (amber), Fees (gray), Net Profit (green or red)
- Hovering a segment shows: label, absolute value ($), percentage of revenue
- Below the chart: a text summary: "For every $100 of revenue, $38.20 is net profit after all costs."

3.4.2 Attribution Inspector Panel

Accessible via the Attribution tab in the right panel. This view is for power users (Priya persona) who need to audit attribution decisions.

Component	Description
Attribution Summary Card	Attribution method breakdown: % of orders via Tier 1, Tier 2, Tier 3, Tier 4, Tier 5. Bar chart.
Coverage Rate	Large number: "74.3% of orders attributed" with amber/green/red semantic color based on threshold.
Confidence Distribution	Histogram showing distribution of confidence scores across attributed orders.
Order-Level Table	Paginated table: Order ID | Date | Amount | SKU(s) | Attribution Tier | Confidence | Match Method | Click ID (truncated)
Override Controls	Button: "Whitelist this campaign from automation" | "Adjust attribution window for this campaign"
Unmatched Orders	Accordion showing unmatched orders with possible reasons (missing UTM, direct traffic, etc.)

3.5 Automation Rules Builder

Automation Rules
/automation — Rule list and builder. Designed for a founder to set up in 3 minutes.

ZONE A — Rules List
Table of all rules: Rule Name | Platform | Scope | Conditions Summary | Action | Status (toggle) | Created | Last Triggered
Status toggle: large ON/OFF pill toggle — OFF = Draft (gray), ON = Active (green)
Rules sorted by: Active first, then by last triggered date
"+ Create Rule" primary button top-right
Empty state: template gallery showing 6 pre-built rule templates

ZONE B — Rule Detail Side Panel (on row click)
Rule name (editable inline)
Full condition display in plain English: "When [7-day rolling net profit] is [less than] [$0] AND [orders attributed] are [more than] [15]"
Action display: "Then pause this ad set"
Guardrails summary, notification channels
Execution history: Last 10 triggers with timestamp + metric values
Buttons: Edit | Duplicate | Delete | Backtest

3.5.1 Rule Builder UI

Plain-English Rule Construction

The rule builder uses a structured form that reads like a sentence. It never exposes raw fields. The sentence template is: "IF [metric] [operator] [value] AND/OR [metric] [operator] [value]... THEN [action] WHEN [guardrail conditions are met]." Each part of the sentence is a dropdown or number input styled as an inline element within the sentence text. The user feels like they are writing a rule in plain English, not configuring a form.

Field	Type	Options / Constraints
Platform	Dropdown	Meta Ads / Google Ads / TikTok Ads (if connected)
Scope	Dropdown	Account / Campaign / Ad Set (most common) / Ad
Rolling Window	Dropdown	Last 1 day / Last 3 days / Last 7 days / Last 14 days / Last 30 days
Metric	Dropdown	Net Profit ($) / Net Profit Margin (%) / ROAS / Ad Spend / Return Cost ($) / Return Rate (%)
Operator	Dropdown	is less than / is greater than / is less than or equal to / is greater than or equal to
Value	Number input	Validated for type ($ for monetary, % for margin, decimal for ROAS)

Field	Type	Options / Constraints
Compound Logic	Toggle	AND / OR (max 5 conditions per rule)
Action	Dropdown	Pause entity / Reduce daily budget by X% / Increase daily budget by X% / Alert only (no API action)
Min Orders Guardrail	Number input	Default: 10. Min: 5. Tooltip: "Rule won't fire until this many orders are attributed."
Min Spend Guardrail	Number input	Default: $50. Tooltip: "Rule won't fire until this much has been spent."
Max Actions/Day	Number input	Default: 10 per ad account. Prevents runaway automation.
Notification	Multi-select	Email / Slack / Webhook / None
Rule Name	Text input	Auto-suggested: "Pause unprofitable ad sets (7-day)"

3.5.2 Backtest Feature

Before activating a rule, users can click "Preview against history." This triggers a non-blocking background job that evaluates the rule against the last 30 days of data and returns: How many times would this rule have fired? Which specific ad sets would have been paused? What would the estimated profit impact have been? Results are displayed as a table and a timeline chart directly below the rule builder within 15–30 seconds.

3.6 Product Profitability View

Product Profitability
/products — SKU-level profit view. The finance manager's view.

ZONE A — Filters & Controls
Filters: Product Category | Min Revenue | Attribution confidence threshold
Toggle: "Show only SKUs with missing COGS" (helps Finance fix data gaps)
Export: CSV with all SKU-level profit data

ZONE B — Product Table
Columns: [Product Image thumbnail] [Product/SKU Name] [Category] [Units Sold] [Revenue] [COGS] [COGS Source badge] [Return Rate] [Return Cost] [Net Margin %] [Campaigns featuring this SKU (count)]
Expandable row: click to see all campaigns that drove sales of this SKU
SKUs with missing COGS show amber badge "No COGS" with "Set COGS" action link
COGS Source badge: "Shopify" (green) | "CSV" (blue) | "Estimate" (amber)

ZONE C — SKU Profit Trends Panel (right side panel)
30-day line chart of Net Margin % for this SKU

Return rate trend: actual returns by week with 180-day rolling average line
Top campaigns driving revenue for this SKU (table)
COGS History: versioned list of past COGS values with who changed them and when

3.7 Reports & Exports

Report Type	Format	Contents	Use Case	Generation Time
Campaign Profit Export	CSV	Per-campaign per-day: spend, revenue, COGS, returns, fees, net profit, orders, attribution coverage	Finance reconciliation, month-end close	< 30 seconds
Account Summary Report	PDF	Charts: profit trend, platform breakdown, top/bottom campaigns. Executive summary paragraph.	Board / investor reporting, client reports	< 60 seconds
Attribution Detail Export	CSV	Per-order: order ID, campaign, ad set, attribution tier, confidence, revenue, COGS, returns	Attribution audit, engineering debugging	< 60 seconds
Automation Activity Report	PDF	All automated actions in period: rule name, entity, action, metric values, timestamps	Compliance, brand safety review	< 30 seconds
COGS Reconciliation Report	CSV	Per-SKU: COGS source, value, return rate, units sold, estimated vs actual returns	Finance team COGS audit, accounting reconciliation	< 30 seconds

PDF Report Design

PDF reports use a consistent PFAM-branded template: indigo header with date range and org name, page numbers, summary KPI tiles on page 1, charts on pages 2–3, data tables on remaining pages. Charts are embedded as SVG-to-rasterized PNG. Reports generated server-side using Puppeteer + Handlebars and stored in S3 with a 15-minute signed URL for download. The download link appears in the UI and is emailed to the user.

3.8 Settings

Settings Section	Key Contents
Connectors	Platform connection status, OAuth re-connect, sync schedule (daily/hourly), manual sync, sync logs, disconnect
COGS & Returns	Per-SKU or category COGS configuration, CSV import tool, return rate overrides, COGS history log
Automation Defaults	Default guardrail values (min orders, min spend, max actions/day), global automation pause toggle, whitelist management
Notifications	Channel setup (email preferences, Slack workspace connection, webhook endpoint + secret), notification type toggles, digest schedule
Team & Permissions	Invite user, manage roles, view active sessions, revoke access, pending invitations
Billing	Current plan + usage meter (ad spend this month vs limit), upgrade/downgrade (Stripe Portal), invoice history, annual billing toggle
Organization	Org name, base currency, time zone, data region (US/EU), attribution window (1/7/14/30-day default)
Developer	API token management (generate, scope, revoke), API documentation link, webhook delivery log, rate limit status
Security	MFA setup/management, active sessions, login history, password change, session revocation

4. Interaction Patterns

4.1 Optimistic UI Updates

To make the product feel fast, all write actions (toggle rule on/off, manual pause, undo action) use optimistic UI: the UI updates immediately before the API call completes. If the API call fails, the UI reverts with an error toast. This applies to:

- Rule activation toggle: ON/OFF state changes immediately; reverts if API fails.
- Manual campaign pause: Row status changes to "Paused" immediately.
- Undo automated action: Action removed from feed immediately; API call runs in background.
- COGS value update: New value shown immediately; historical recalculation shown as "Recalculating…" state.

4.2 Progressive Data Loading

When a user opens the dashboard after a sync is in progress, data loads progressively rather than blocking on a full-page loader:

1. KPI cards load first (from cache) with a "Updating…" badge if a new sync is in progress.
2. Campaign table loads with cached data (previous sync) immediately. New sync results update in place when ready.
3. Right-side detail panels load fresh (no cache) when opened.
4. Attribution data loads asynchronously — a spinner in the Attribution column until complete.

4.3 Date Range Changes

The global date range selector is persistent in the top bar. Changing the date range triggers:

5. Immediate skeleton state on all KPI cards and the campaign table.
6. API calls fired in parallel for all visible data components.
7. Components render as soon as their data resolves (not waiting for all to complete).
8. Previously selected date range saved in URL (e.g., ?range=7d) for shareable links.

4.4 Automated Action Flow (User Notification)

When an automation rule fires, the user is notified through multiple channels in a defined sequence:

Step	Trigger	Channel	Delay	User Action Required?
1	Rule fires (system)	In-app notification badge increments	Immediate	No
2	Action executed	Slack message (if configured)	< 5 minutes	No

Step	Trigger	Channel	Delay	User Action Required?
3	Action executed	Email notification (if configured)	< 5 minutes	No
4	User opens app	Activity feed shows new entry with Undo button	On login	Optional: Undo
5	8 hours pass	Daily digest email (if digest mode enabled)	Batched 8am	No
6	User reviews	Can undo from app, email link, or Slack button	Up to 24h	Optional

4.5 Empty States

Empty states are critical — a blank screen loses users. Every empty state must answer: Why is this empty? What should I do about it?

Screen / State	Illustration Concept	Headline	Sub-text	Primary CTA
No platforms connected	Unplugged cable illustration	No data yet	Connect your Shopify store and ad accounts to see your true profit.	Connect Shopify
No campaigns in date range	Empty calendar illustration	No campaigns found for this period	Try expanding your date range or check your platform connection.	Change Date Range
No automation rules	Robot sleeping illustration	Your ads are flying blind	Create your first rule to automatically pause unprofitable campaigns.	Create Your First Rule
No reports generated	Empty folder illustration	No reports yet	Export your first profit report to share with your team or accountant.	Export Profit Report
Low attribution coverage	Broken magnifying glass	Attribution data is sparse	PFAM needs more data to attribute accurately. You'll see better results after 14 days of operation.	Learn about Attribution

4.6 Error Handling

Error Type	Display Location	Message Pattern	Recovery Action
Platform API failure	Connector status bar (amber chip)	Meta Ads sync failed. We'll retry automatically in 15 minutes.	Sync Now button
Automation action failed	Activity feed entry + email	Pause failed for "Campaign X" on Meta. Retrying (1 of 3).	View details link
Attribution below threshold	Dashboard warning banner (dismissible)	Attribution coverage is 38% — below our recommended 60%.	Attribution setup guide link
Billing payment failed	Top-of-app red banner	Your payment failed. Features will pause in 7 days.	Update billing link
COGS data missing	Metric tooltip + product table amber badge	Net profit may be understated — COGS not configured for 14 SKUs.	Configure COGS link
Session expired	Modal overlay	Your session expired for security. Please sign in again.	Sign in button
Rate limit hit (user action)	Inline error on button	You've reached the sync limit. Try again in 4 minutes.	Timer countdown

5. Data Visualization Guidelines

5.1 Chart Principles

- Every chart must have a clear takeaway. If the chart doesn't tell a story, it doesn't ship.
- Profit-positive values always use green (#059669). Profit-negative always use red (#DC2626). No exceptions.
- Charts never use more than 4 data series at once. Additional series go behind a "show more" toggle.
- All charts have loading and empty states. No blank white rectangles.
- Tooltips on every data point: show exact value, date, and context (e.g., "7-day rolling net profit: $1,240 on Feb 10").

5.2 Chart Types & Usage

Chart Type	Library	Use Cases	Key Config
Line Chart	Recharts <LineChart>	Profit trend over time, spend vs revenue over time, rolling metric trends	Smoothed curves (monotone), reference line at $0 for profit, filled area below zero = red fill
Horizontal Stacked Bar	Recharts <BarChart horizontal>	Profit breakdown (Revenue → costs → Net Profit), COGS composition	Each segment a different semantic color, hover shows segment value + % of total
Grouped Bar Chart	Recharts <BarChart>	Platform comparison (Meta vs Google vs TikTok), week-over-week comparison	Grouped by date, max 3 series, legend below chart
Treemap	D3 treemap	Campaign health heatmap on Account Overview, spend distribution	Cell size = spend, cell color = profit status (green/amber/red/gray)
Scatter Plot	Recharts <ScatterChart>	Spend vs Net Profit (efficiency view), Confidence vs Profit (attribution quality)	X = spend, Y = profit, dot size = orders, color = profit status
Spark Lines	Recharts miniaturized	KPI card trends, table row micro-trends	7-day trend, no axes, simple line, semantic color
Donut Chart	Recharts <PieChart>	Attribution tier distribution, platform spend split	Max 5 segments, legend with values, center label shows total

Chart Type	Library	Use Cases	Key Config
Histogram	Recharts <BarChart>	Attribution confidence score distribution	Bins of 0.1, semantic coloring (<0.6 gray, 0.6–0.85 amber, >0.85 green)

5.3 Profit Trend Chart — Detailed Specification

The profit trend line chart is the most important visualization in the product. It appears on the Account Overview, Campaign detail panel, and the Ad Set view.

Property	Specification
X Axis	Date. Tick frequency: daily for ≤30 day range; weekly for >30 days.
Y Axis	Net Profit ($). Left axis: profit. Right axis (secondary, dashed): Ad Spend ($).
Series 1	Net Profit — solid line, semantic color (green where positive, red where negative). Area fill: 20% opacity matching line color.
Series 2	Ad Spend — dashed gray line, secondary Y axis. Always shown for context.
Zero Line	Solid horizontal reference line at y=0. Thick (2px), dark gray. Labeled "Break-even".
Negative Area	Below-zero area has a red 10% opacity fill to visually emphasize loss periods.
Automated Actions	Vertical dashed line on dates where a rule fired. Hover shows what action was taken.
Tooltip	Shows: Date, Net Profit, Ad Spend, Attributed Revenue, Attribution Coverage % for that day.
Height	240px on dashboard, 320px in detail panels, 160px for sparklines in table rows.
Annotations	If data confidence is low (< 40% coverage), show a gray hatched overlay on affected date ranges.

6. Responsive Design Specifications

6.1 Mobile-Specific Patterns

Mobile design is not a simplified desktop. It is a purpose-built experience optimized for the two primary mobile use cases: (1) Morning check-in: review overnight performance, see any automated actions taken. (2) Quick action: approve or undo an automated action from a notification.

Component	Desktop Behavior	Mobile Behavior
Navigation	Fixed left sidebar (240px)	Bottom tab bar with 5 icons. Active indicator is a filled pill behind icon.
KPI Cards	4 cards in a row	Horizontal scrollable row, each card 160px wide, snap-scroll behavior
Campaign Table	Full table with all columns	Simplified card list: Campaign name + Net Profit badge + Spend. Tap to expand inline.
Charts	Full-size (240–320px height)	Compact sparklines only. Full chart accessible via "View full chart" button.
Date Range Selector	Top bar dropdown	Bottom sheet with preset pills (7d, 14d, 30d) + calendar date picker
Right Detail Panel	Slides in from right (400px wide)	Full-screen overlay with back button
Rule Builder	Multi-column form	Single-column stacked form, simplified to 3 most common rule types
Notifications	Bell icon in top bar	Full-screen notification list as first-class bottom tab item
Automation Activity Feed	Sidebar panel on dashboard	Swipeable card stack on dashboard mobile view
Export	Button triggers download	Button triggers email delivery to signed-in address (no direct download)

6.2 Touch Interaction Guidelines

- Minimum tap target size: 44×44px (Apple HIG standard).
- Table rows: tap to expand (show inline details). Long-press for context menu (pause, add rule).
- Toggle switches: minimum 48×28px with clear ON/OFF label.
- Swipe right on an activity feed entry: reveals Undo action button.

- Pull-to-refresh triggers a manual sync (rate-limited, same as Sync Now button).
- Bottom sheets instead of dropdowns for all selection UI on mobile.

6.3 Performance Budget (Mobile)

Metric	Target	Measurement Tool
First Contentful Paint (FCP)	< 2.0 seconds on 4G	Lighthouse / WebPageTest
Largest Contentful Paint (LCP)	< 2.5 seconds	Core Web Vitals
Cumulative Layout Shift (CLS)	< 0.1	Core Web Vitals
Time to Interactive (TTI)	< 4.0 seconds on 4G	Lighthouse
Total bundle size (initial)	< 200 KB gzipped JS	Webpack Bundle Analyzer
Images	All chart images lazy-loaded, SVG icons inline	Manual audit

7. Accessibility Requirements

7.1 Compliance Target

PFAM targets WCAG 2.1 Level AA compliance for all primary user journeys. This is both an ethical requirement and a commercial necessity for enterprise sales (many companies require AA compliance in vendor contracts).

7.2 Accessibility Specifications

Area	Requirement	Implementation Notes
Color Contrast	All text must meet 4.5:1 contrast ratio (AA). Large text: 3:1.	Test all semantic colors against their backgrounds. Profit green (#059669) on white (#FFFFFF) = 4.6:1. ✓
Keyboard Navigation	All interactive elements reachable by keyboard. Focus order is logical.	Use native HTML semantics. Tab order follows visual order. Visible focus rings (2px indigo outline).
Screen Reader Support	All non-text content has text alternatives. Charts have accessible data tables.	ARIA labels on icons. Chart data exposed as summary table with aria-hidden on visual chart.
Semantic Profit Status	Profit status must not rely on color alone.	Add text label to all status indicators: ▲ Profitable, ▼ Loss. Not just color dots.
Form Accessibility	All form inputs have associated labels. Error messages linked to inputs.	htmlFor on all labels. aria-describedby for error messages. aria-invalid on error state.
Motion / Animation	Respect prefers-reduced-motion. All animations must have a no-motion alternative.	CSS: @media (prefers-reduced-motion) disables sparkline animations, confetti, slide transitions.
Timeout Management	If session expires, user is warned with at least 60 seconds notice.	Modal at 5-min inactivity: "Your session will expire in 5 minutes. Continue?" with extend/logout.
Table Accessibility	Data tables have proper scope and header associations.	<th scope="col"> on all table headers. caption element on all tables. Summary of table content.
Notifications	Alert notifications announced to screen	role="alert" on toast notifications. Automated action alerts use aria-live="polite".

Area	Requirement	Implementation Notes
	readers without requiring focus.	

7.3 Accessibility Testing Plan

- Automated testing: Axe DevTools integrated into CI pipeline. Zero critical violations allowed in any PR.
- Manual testing: All primary user journeys tested with VoiceOver (macOS) and NVDA (Windows) quarterly.
- Keyboard testing: Full journey from login to rule activation completed using keyboard-only monthly.
- Color contrast: All new components submitted with a Figma contrast-check screenshot.

8. Design Handoff & Engineering Guidelines

8.1 Component Naming Conventions

Layer	Convention	Example
Design tokens	kebab-case	color.profit.positive, space-4, radius-md
React component names	PascalCase	ProfitBadge, CampaignTable, RuleBuilder
CSS classes (Tailwind)	Use design tokens mapped to Tailwind config	bg-profit-positive, text-brand-primary
File structure	Feature-based folders	src/features/campaigns/CampaignTable.tsx
Storybook stories	ComponentName.stories.tsx	CampaignTable.stories.tsx
Test files	ComponentName.test.tsx	RuleBuilder.test.tsx

8.2 Design-to-Code Workflow

9. Designer creates/updates component in Figma. All states documented (default, hover, active, disabled, loading, error, empty).
10. Design review: PM + Engineering Lead review in Figma before implementation begins. Edge cases discussed.
11. Design tokens exported to a shared tokens.ts file if new tokens are introduced.
12. Engineer implements in Storybook first (isolated, all states visible).
13. Design QA: Designer reviews Storybook against Figma. Sign-off required before integration.
14. Integration QA: Tested in context of the full page on desktop, tablet, and mobile.
15. Accessibility check: Axe DevTools run on the integrated page before merge.

8.3 Browser & OS Support

Platform	Support Level	Notes
Chrome (latest 2 versions)	Full	Primary development target
Safari (latest 2 versions)	Full	Required for iOS Safari parity

Platform	Support Level	Notes
Firefox (latest 2 versions)	Full	—
Edge (latest 2 versions)	Full	Chromium-based, low incremental cost
iOS Safari (iOS 16+)	Full	Primary mobile browser
Android Chrome (latest 2)	Full	Primary Android browser
Chrome < 100, IE11	Not supported	Not in our user demographic

8.4 Animation & Motion Guidelines

Animation Type	Duration	Easing	When to Use
Page transition (route change)	150ms	ease-out	Navigating between top-level routes
Panel slide-in (right detail)	250ms	ease-out (spring)	Opening campaign/rule detail panels
Modal appear	200ms	ease-out	Dialogs, confirmation modals
Toast notification	300ms in, 200ms out	ease-in-out	Success, error, and info toasts
Toggle/Switch	200ms	ease-in-out	Rule activation toggle, settings toggles
Skeleton loader pulse	1500ms loop	ease-in-out	Loading states across all components
Chart draw	600ms on first render	ease-out	Line charts, bar charts on first mount only
Number count-up	800ms	ease-out	KPI card values on first load (optional, reduced-motion safe)

9. Revision History

Version	Date	Author	Changes
1.0	February 2026	Product Design + Engineering	Initial design document. Covers full design system, 7 core screen specifications, interaction patterns, responsive design, accessibility, and handoff guidelines.