# **Business Proposal**: CampusTrail — All‑in‑One Campus Travel Hub

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# 1. Executive Summary

## 1.1 Introduction

CampusTrail is a campus‑only, multisided marketplace that consolidates three fragmented student journeys—**gear rentals**, **itinerary sharing**, and **travel companion matching**—into a single, trusted platform. Current options require students to hop between city‑wide gear rental providers, generic itinerary apps, and broad social/group platforms. CampusTrail removes this friction by embedding **trust primitives** (deposit lifecycle, verified identities, polymorphic reviews, and in‑app dispute outcomes) directly into the transaction flow, tuned for short‑haul campus handoffs and student budgets.

## 1.2 Value Proposition

**Students** gain a one‑stop portal for renting quality gear at low cost, planning trips with peers, and forming groups safely within a verified community. **Clubs** gain a lightweight asset ledger and visibility, while **campus administration** benefits from safer student exchanges and transparent accountability. The integrated model reduces search time, increases match rates, mitigates risk via deposits and evidence‑based disputes, and improves reuse of high‑value items—lowering both personal cost and environmental footprint.

## 1.3 Product and Services

* **Gear Marketplace:** Listing lifecycle (draft/publish/archive), buffer‑aware availability, request/approve/pickup/return, and **deposit states** (pending/held/released/captured/refunded).
* **Itinerary Planning:** Create itineraries with tags/interests, capacity, approvals, and automated suggestions to companion requests based on a 0–100 match score.
* **Companion Matching:** Verified campus profiles, safety cues, approvals, and post‑trip feedback.
* **Polymorphic Reviews:** Reputation across **gear / itineraries / users / companion requests**.
* **Orders & History:** Persistent snapshots for profile reporting and audits.
* **Trust & Disputes:** In‑app claims with evidence and simple outcomes.
* **Auth & Security:** Email OTP → JWT, rate limits, optional event logging.
* **Planned Enhancements:** Payment gateway (UPI/cards) for **real deposit holds**, messaging/notifications, media uploads (S3/Blob), recommendation engine, reputation scoring, **locker hubs** pilot, Postgres migration and CI/CD, PWA polish.

## 1.4 Market Identification

**Primary segment:** Residential campuses with active club ecosystems (trekking, photography, cultural/tech fests). **Secondary:** Alumni/near‑campus residents (KYC‑gated). Demand spikes before fest seasons and semester breaks. Decisions are often group‑driven; thus CampusTrail’s shared planning and deposit features directly influence adoption.

## 1.5 Sustainable Competitive Advantage

* **Campus‑verified perimeter** creates trust not replicable by city‑wide platforms.
* **End‑to‑end integration** (gear ↔ itinerary ↔ companions) collapses multiple frictions competitors address piecemeal.
* **Embedded risk controls** (deposit lifecycle, QR/OTP chain‑of‑custody, disputes) reduce losses and moral hazard.
* **Local liquidity** on campus shortens time‑to‑match and lowers operational complexity.
* **Data flywheel:** Closed‑loop events (search → rent → return → review) improve recommendations and reputation scoring over time.

## 1.6 Marketing

* **Positioning:** “One app for gear, plans, and people—campus‑verified and deposit‑protected.”
* **Channels:** Ambassadors, society tie‑ups, referral credits, UTM‑tracked social campaigns, micro‑events (pop‑up ‘gear walls’).
* **Proof:** Showcase deposit lifecycle demos, dispute evidence flows, and on‑time return rates in campus presentations.
* **Metrics:** Request→Paid conversion, time‑to‑first‑match, CAC via referrals, NSM = completed rentals/month, repeat usage.

## 1.7 Operational Plan

* **Supply seeding:** 100+ high‑demand listings via club partnerships and incentives.
* **Policy center:** Transparent fee/cancellation/late/damage schedules; evidence checklists.
* **Service:** In‑app tickets, SLAs (6‑hour first response; 24‑hour dispute triage), escalation playbooks.
* **Tech Ops:** Health checks, logging, error budgets, rollbacks; analytics pipelines for funnel and cohort views.

# 2. Product/Service Information

## 2.1 Schematic Diagram

[ Student (Renter/Lender) ]  
 │ Web/PWA (React + Vite, Tailwind, Framer)  
 ▼  
[ Auth (Email OTP → JWT) ] ─────► [ REST API (Express + Zod) ] ─────► [ Prisma ORM ] ─────► [ DB: SQLite (dev) / Postgres (prod) ]  
 │  
 ├── Payments Gateway (Razorpay/Stripe) – planned (hold/capture/release)  
 ├── Object Storage (S3/Blob) – planned (gear photos, evidence)  
 ├── Messaging/Notifications – planned (in‑app + email)  
 └── MSSQL Event Log (optional, timeout‑safe)  
  
Domains: Gear ▸ Rentals ▸ Deposits ▸ Disputes ▸ Reviews ▸ Itineraries ▸ Companions ▸ Orders  
Key Events: search ▸ view\_item ▸ start\_checkout ▸ deposit\_hold ▸ pickup\_confirmed ▸ return\_confirmed ▸ review\_submitted ▸ dispute\_opened

## 2.2 Use Cases (5 different)

**1) Fest DSLR Rental**  
*Actors:* Club volunteer (renter), senior student (lender).  
*Preconditions:* DSLR listed with deposit ₹3,000; availability visible; renter verified.  
*Steps:* Search DSLR → request slot → lender approves → **deposit hold** → pickup at media room with **QR/OTP** → return with photos → **deposit release** → mutual reviews.  
*Success metrics:* ≤24h approval, on‑time return %, damage disputes <2%.

**2) Trekking Group Formation**  
*Actors:* Trip initiator (itinerary host), 3 companions, multiple lenders.  
*Steps:* Create itinerary (tags: trek, weekend) → companion requests auto‑matched (score ≥70) → approvals → group rents tents/crampons → synchronized pickup windows → return and reviews.  
*Metrics:* Match acceptance rate, shared gear utilization, post‑trip NPS.

**3) Last‑Minute Tripod**  
*Actors:* Presenter (renter), nearby lender.  
*Steps:* Filter by proximity and 3‑hour slot → buffer logic prevents overlap → instant request → **quick approval** → pickup within 30 min → return same day → **auto‑release**.  
*Metrics:* Time‑to‑first‑match, short‑rental completion rate.

**4) Club Gear Pool**  
*Actors:* Club admin (lender), multiple renters.  
*Steps:* Club lists verified inventory under “Club” profile → featured placement → orders tracked per item → on‑time % and dispute outcomes feed reputation → periodic audits.  
*Metrics:* Utilization %, on‑time returns, dispute frequency.

**5) Damage Dispute Resolution**  
*Actors:* Lender, renter, reviewer (arbitration role optional).  
*Steps:* Lender opens dispute with timestamped photos → policy matrix suggests partial capture (e.g., lens scratch tier) → outcome recorded → **deposit capture** portioned → reputations adjusted.  
*Metrics:* Median resolution time, % resolved without admin escalation.

## 2.3 Activity Diagrams (Detailed per Use Case)

### 2.3.0 Generic Rental Flow

[Browse/Search] → [Select Gear] → [Request Rental]  
 ↓ ↓ ↓  
 [Check Avail + Buffer] [Owner Approves]  
 ↓ ↓  
 [Hold Deposit (Gateway)] ← (If declined, notify)  
 ↓  
 [Pickup (QR/OTP)] → [In Progress] → [Return]  
 ↓  
 [Inspect] → [Release/Capture/Refund]  
 ↓  
 [Mutual Reviews]

**Preconditions:** Listing published; both users verified.  
**Postconditions:** Rental closed; deposit released or captured; reviews recorded.  
**Exceptions:** Payment timeout → cancel; no-show → late fee.

### 2.3.1 Fest DSLR Rental — Activity Diagram

[Search DSLR] → [Select Listing] → [Request Rental]  
 ↓ ↓  
[Validate + Buffer Check] → [Owner Approves?] ──No──> [Notify Decline & End]  
 │Yes  
 ↓  
 [Create Deposit Intent]  
 ↓  
 [Deposit Hold Success?] ──No──> [Cancel / Retry]  
 │Yes  
 ↓  
 [Issue QR/OTP]  
 ↓  
 [Pickup Item]  
 ↓  
 [IN\_PROGRESS]  
 ↓  
 [Return Item]  
 ↓  
 [Inspect Condition OK?] ──No──> [Open Dispute → Hold Deposit]  
 │Yes  
 ↓  
 [Release Deposit]  
 ↓  
 [Reviews & Close]

**Preconditions:** Listing is PUBLISHED with deposit set; both users verified.  
**Postconditions:** Rental closed; deposit released or partially captured; reviews recorded.  
**Exceptions:** Payment timeout → auto‑cancel; no‑show → late fee; early return outside window prompts manual approval.

### 2.3.2 Trekking Group Formation — Activity Diagram

[Create Itinerary] → [Publish] → [Match Candidates]  
 ↓  
 [Approve Candidates]  
 ↓  
 [Suggest Required Gear]  
 ↓  
 [Add Gear to Shared Cart]  
 ↓  
 [Create Rentals per Item]  
 ↓  
 [Deposit Holds Complete?] ──No──> [Remind / Replace Member]  
 │Yes  
 ↓  
 [Issue QR/OTP per Item]  
 ↓  
 [Pickup → Trip → Return]  
 ↓  
 [Per-Item Inspection Outcome?]  
 ├─ All OK → [Release Deposits]  
 └─ Any Damage → [Open Dispute(s)]  
 ↓  
 [Reviews & Close]

**Preconditions:** Itinerary PUBLISHED; candidates verified; gear exists or can be listed quickly.  
**Postconditions:** Group formed; gear rentals reconciled; multi‑entity reviews submitted.  
**Exceptions:** Capacity reached; date changes propagate to rentals; member drops out → re‑matching.

### 2.3.3 Last‑Minute Tripod — Activity Diagram

[Filter by Proximity + Slot] → [See Fast-Pickup Listings] → [Instant Request]  
 ↓  
 [Owner Approves?] ──No──> [Fallback to Next Lender]  
 │Yes  
 ↓  
 [Create Deposit Intent]  
 ↓  
 [Issue QR/OTP Immediately]  
 ↓  
 [Pickup in ≤30 min]  
 ↓  
 [Use & Return]  
 ↓  
 [Quick Inspection OK?] ──No──> [Open Dispute]  
 │Yes  
 ↓  
 [Auto-Release]  
 ↓  
 [Micro-Review Prompt]

**Preconditions:** Listing supports short rentals; lender opted‑in for instant approvals.  
**Postconditions:** Rapid cycle complete; high CSAT; micro‑review captured.  
**Exceptions:** Lender idle → fallback to next lender; renter late → auto late fee per policy.

### 2.3.4 Club Gear Pool — Activity Diagram

[Club Bulk-Lists Inventory] → [Verify & Feature] → [Member Requests]  
 ↓  
 [Queue Approvals]  
 ↓  
 [Approve Requests]  
 ↓  
 [Issue QR/OTP]  
 ↓  
 [Pickup → Use → Return]  
 ↓  
 [Inspection OK per Item?] ──No──> [Open Dispute]  
 │Yes  
 ↓  
 [Release Deposit & Update Ledger]  
 ↓  
 [Export Monthly Reports]

**Preconditions:** Club verified; inventory baseline captured.  
**Postconditions:** Transparent ledger; utilization and reliability stats.  
**Exceptions:** Peak clashes → suggest alternate slots; missing item → temporary delist.

### 2.3.5 Damage Dispute Resolution — Activity Diagram

[Flag Damage at Return] → [Open Dispute]  
 ↓ ↓  
 [Upload Evidence] [Lock Deposit & Classify Severity]  
 ↓ ↓  
 [Renter Responds?] ──No──> [Proceed with Available Evidence]  
 │Yes  
 ↓  
 [Ingest Counter-Evidence]  
 ↓  
 [Review & Decision] → [Outcome?]  
 ├─ Release → [Release Deposit]  
 ├─ Partial → [Capture Partial Amount]  
 └─ Full → [Capture Full Amount]  
 ↓  
 [Update Reputations]  
 ↓  
 [Notify & Close Case]

**Preconditions:** Rental in RETURN state; evidence capture available.  
**Postconditions:** Outcome recorded; funds moved accordingly; reputations updated; logs retained.  
**Exceptions:** Incomplete evidence → request more; SLA breach → auto partial release rule.

## 2.4 Sequence Diagrams (Key Interactions)

### 2.4.1 Deposit Hold/Capture/Release — Linear View

[Request Rental] → [Create Deposit Intent] → [Redirect to Pay]  
 ↓ ↓  
[Payment Success?] ──No──> [Cancel / Retry]  
 │Yes  
 ↓  
[Mark Rental APPROVED] → [Deposit = HELD] → [Issue Pickup QR/OTP]  
 ↓  
[Pickup Recorded] → [IN\_PROGRESS] → [Return Recorded]  
 ↓  
[Outcome OK?] ──No──> [Capture Partial/Full Amount]  
 │Yes  
 ↓  
[Release Deposit] → [Notify Parties] → [Close with Reviews]

### 2.4.2 Dispute Resolution Flow — Linear View

[Open Dispute] → [Lock Deposit] → [Collect Evidence (Lender/Renter)]  
 ↓  
[Reviewer Needed?] ──Yes──> [Assign Reviewer / SLA Clock]  
 │No  
 ↓  
[Evaluate Policy Matrix] → [Decide: Release / Partial / Full Capture]  
 ↓  
[Apply Deposit Action] → [Update Reputation] → [Notify & Close] → [Archive Audit Log]

## 2.5 Role Swimlanes & Permissions Matrix

| Action | Renter | Lender | Club Admin | Itinerary Host | Campus Admin/Reviewer |
| --- | --- | --- | --- | --- | --- |
| Browse/search | ✓ | ✓ | ✓ | ✓ | ✓ |
| Create listing | — | ✓ | ✓ | — | — |
| Approve rental | — | ✓ | ✓ | — | — |
| Request rental | ✓ | — | — | — | — |
| Hold/capture/release deposit | — | — | — | — | ✓ (policy oversight) |
| Mark pickup/return | ✓ (confirm) | ✓ | ✓ | — | — |
| Open dispute | ✓ | ✓ | ✓ | — | ✓ (assign/review) |
| Resolve dispute | — | — | — | — | ✓ |
| Create itinerary | — | — | — | ✓ | — |
| Approve companions | — | — | — | ✓ | — |
| Reviews | ✓ | ✓ | ✓ | ✓ | — |

# 3. Industry Analysis and Market

## 3.1 Key Features of Conventional Services

* **Meetup (companions/groups):** Event and group discovery, RSVP flows, broad community building; **no** campus verification, **no** gear or deposit workflows.
* **Itinsy (itineraries):** Community‑shared itineraries with destination/month filters; **no** transactional handoff, deposits, or verified identity layer.
* **SharePal (gear rentals):** City‑wide rentals with delivery/return options and item‑level policies; limited identity assurance for campus peers; **no** integration with itineraries or companion matching.

## 3.2 Challenges Facing Conventional Services

* **Fragmentation & drop‑offs:** Students navigate 2–3 platforms; coordination breaks at payment and handoff stages.
* **Trust deficit:** Broad audiences without .edu context increase perceived risk; limited recourse for damage/no‑shows.
* **No escrow/deposits in planning flows:** Itinerary and companion tools lack integrated risk controls.
* **Long‑haul logistics:** City‑wide providers optimize delivery, not short‑haul, time‑bounded campus exchanges.
* **Siloed data:** No single view of the journey from search → transaction → reputation.

## 3.3 Opportunities for Growth (CampusTrail)

* **Unified journeys** with embedded trust increase conversion and satisfaction.
* **Campus density** enables faster matches, better unit economics, and repeat usage.
* **Reputation and deposits** unlock higher‑value items safely.
* **Locker hubs + QR** reduce friction and staff load.
* **Learning system:** Event data improves recommendations and policy tuning.

# 4. CampusTrail

## 4.1 Customer Segments (Personas & JTBD)

* **Riya (Renter, 21, Photography Club):** Needs short‑term access to quality gear at fair prices with minimal risk. *Jobs to be done:* “Find a DSLR by tonight,” “Avoid paying a huge deposit,” “Trust the lender.” *Success:* time‑to‑match ≤24h, on‑time returns, 5‑star reliability.
* **Arjun (Lender, 23, Final Year):** Wants to monetize idle assets safely. *Jobs:* “List gear fast,” “Protect against damage,” “Get paid fairly.” *Success:* utilization %, low dispute rate, positive reviews.
* **Meera (Club Admin):** Manages shared inventory for society events. *Jobs:* “Maintain a ledger,” “Reduce losses,” “Report to faculty.” *Success:* utilization dashboards, on‑time %, monthly exports.
* **Kabir (Itinerary Host):** Organizes treks/road trips. *Jobs:* “Fill capacity with the right people,” “Ensure everyone has gear,” “Coordinate handoffs.” *Success:* match acceptance rate, no‑show %, post‑trip NPS.
* **Aisha (Companion Seeker):** Wants like‑minded, safe travel partners. *Jobs:* “Discover trips,” “Vet participants,” “Have backups.” *Success:* successful joins, safety satisfaction, repeat usage.
* **Campus Partner (Safety/Facilities):** Oversees grievance, lockers, and student safety. *Jobs:* “Visibility into escalations,” “Locker access control,” “Policy compliance.” *Success:* low incident rate, SLA adherence.

## 4.2 Services Features Offered (Deep Dive)

**Gear Marketplace**  
- Listing lifecycle (draft/publish/archive), rich metadata (condition, serial/IMEI optional), photos (S3 planned). - **Availability engine** with **buffer modes** (DAY/PARTIAL) and conflict detection. - **Rental lifecycle** with **pickup/return QR/OTP** and chain‑of‑custody events. - **Deposits**: configurable per item; deposit **hold → release/capture/refund**; late fees; cancellation windows.

**Itinerary Planning**  
- Create itineraries with destination/date, capacity, style, and interests; approvals; waitlist. - **Match suggestions** (0–100 score) against companion requests; batch notifications. - Link required gear to itineraries; shared cart for group gear.

**Companion Matching**  
- Companion requests with safety cues (profile completion, prior reviews, verified email/ID). - Host approvals; group chat **(messaging planned)**; attendance roster; post‑trip feedback.

**Trust & Reputation**  
- **Polymorphic reviews** across users, gear, itineraries, and companion requests. - **Disputes** with evidence collection, policy matrix, and **simple outcomes** (release/partial/full capture). - **Audit logs** (optional MSSQL) and exportable evidence bundles.

**Orders & History**  
- Snapshot line items and receipts (email/PDF planned); profile history; **club ledger exports**.

**Security & Auth**  
- Email OTP → JWT, rate limits, device/session management (planned), anomaly detection (planned).

## 4.3 Future Growth Potential (Scenarios & Moats)

* **Transacting at scale:** Payment gateway live for UPI/cards; automated receipts; partial capture workflows; risk scoring on renters/lenders.
* **Engagement:** In‑app messaging, push/email notifications, review nudges; gamified badges (On‑Time Pro, Trusted Lender).
* **Intelligence:** Recommendation engine for gear & itineraries; **reputation score** blending reviews, dispute outcomes, and on‑time behavior.
* **Operations:** Locker hubs with access control; QR kiosks; club/admin dashboards; SLA analytics; incident heatmaps.
* **Ecosystem:** Insurance add‑ons and damage waivers; affiliate feeds (e.g., list SharePal inventory with campus verification overlay).
* **Expansion:** Postgres migration; CI/CD; multi‑campus rollout with localization (currency/time zone/holidays); campus #2–#5 playbook.

## 4.4 Key Market Drivers (with Implications)

* **UPI ubiquity & QR literacy:** Enables deposit holds and quick handoffs → prioritize UPI flows and QR UX.
* **Sustainability & budget sensitivity:** Strong rental value proposition → emphasize reuse and lower TCO.
* **Club culture & peer networks:** Natural early adopters → ambassador program and society tie‑ins.
* **Safety expectations:** Verified campus perimeter, reviews, and disputes → invest in moderation and evidence tooling.

# 5. PESTEL Analysis

* **Political:** Campus MOUs, grievance redressal requirements, state consumer norms.
* **Economic:** Student purchasing power, seasonal demand, gateway MDR, price elasticity for deposits/fees.
* **Sociocultural:** Peer influence, club participation, safety norms, environmental consciousness.
* **Technological:** UPI/NFC/QR, PWA, cloud, analytics, AI recommendations; reliability and privacy by design.
* **Environmental:** Rental reuse lowers consumption and waste; promote repair policies.
* **Legal:** Terms of use, content moderation, privacy & data retention, **GST on commissions**, IP for photos.

# 6. Porter’s Five Forces Analysis

* **Threat of New Entrants:** Moderate—tech is buildable; campus trust/liquidity and policy scaffolding are harder moats.
* **Supplier Power (Lenders/Clubs):** Medium—multi‑homing is possible, but reputation and convenience increase stickiness.
* **Buyer Power (Renters/Hosts):** Medium‑high—price sensitive; mitigated via convenience, safety, and campus proximity.
* **Threat of Substitutes:** High—buying gear outright, generic social groups; mitigated by integrated flows and escrow.
* **Rivalry:** Fragmented—no campus‑focused, full‑stack rival; city‑wide players compete on single legs.

# 7. Value Net Model

* **Customers:** renters, itinerary hosts, companion seekers.
* **Suppliers:** lenders (students/clubs), itinerary/content creators, payment/storage vendors.
* **Competitors:** Meetup (companions), Itinsy (itineraries), SharePal (rentals), spreadsheets/WhatsApp.
* **Complementors:** lockers/couriers, insurance partners, campus safety cells, map & analytics vendors.  
  **Co‑opetition:** selectively syndicate inventory (affiliate supply), cross‑post public itineraries for discovery, while retaining campus verification and deposit logic.

# 8. Operations Plan

## 8.1 R&D Department (Website)

* **Stack:** React 18 + Vite, Tailwind, Express/TypeScript, Prisma; SQLite (dev) → Postgres (prod).
* **Practices:** Trunk‑based development, code reviews, feature flags, environment parity, TypeScript strict mode, Zod validation, security linters.
* **Quality gates:** tsc/noEmit, unit tests (Vitest/Jest), schema validation, endpoint smoke tests, CI (GitHub Actions).
* **Backlog priorities:** Payments integration, dispute UI timeline/evidence, Orders UI, media uploads, messaging, recommendations, reputation, error envelope + pagination standardization, analytics pipelines, PWA polish.

## 8.2 Sales & Marketing

* **Seeding:** 10–15 ambassadors; club MoUs; featured lister badges; fee holidays for launch month.
* **Campaigns:** Referral credits (₹100/₹100), UTM‑tracked reels, on‑ground demos, society hack‑days for bulk listings.
* **Measurement:** Requests, approvals, **request→paid %**, time‑to‑first‑match, GMV, take‑rate, CAC, K‑factor, retention cohorts.
* **Content & Safety:** How‑to videos; policy explainers; safety checklists before pickup/return.

## 8.3 Finance

* **Pricing model:** Take‑rate 8–12% on rental fee (not on deposit).
* **Illustrative unit economics:**  
  GMV = Σ(rental\_fee).  
  Revenue = GMV × take‑rate.  
  Gross Margin ≈ Revenue − (gateway fees + support/moderation + hosting).
* **Controls:** Monthly GMV close; dispute provisions; audit logs; budget vs actual; lightweight dashboards for GMV, net revenue, MDR, dispute cost share.
* **Future monetization:** Featured slots, locker access, insurance add‑ons, club dashboards.

## 8.4 Customer Service

* **Channels:** In‑app tickets + email; status updates; templated macros.
* **SLAs:** First response ≤6h (pilot), dispute triage ≤24h, resolution ≤72h where evidence is complete.
* **Playbooks:** Late/no‑show, minor/major damage tiers, abuse/ban policies, privacy requests.
* **Voice of customer:** NPS after returns; tag root causes; feed back into product backlog.

## 8.5 Logistics & Procurement

* **Handoffs:** QR/OTP codes, slotting windows, buffer education in UI.
* **Locker pilot:** RFP with campus facilities; access control and audit logs; insurance riders for locker inventory.
* **Procurement:** Signage, QR stands, protective cases; optional repair kits for common gear.

# 9. Timeline from Start to Launch and Next 1 Year (−12 to +12 Months)

## Pre‑Launch Plan (T−12 to T−1)

* **T−12 to T−9 (Discovery & Foundations):** Problem interviews (≥40 students), competitor benchmarking, policy drafts (deposits, disputes, late fees), campus MOU draft, data model v0, low‑fi prototypes; success gate: *validated need*.
* **T−8 to T−6 (MVP Build):** Core backend (Express/Prisma), OTP→JWT auth, gear listings & availability, rental lifecycle skeleton, reviews v0; seed 30+ listings via clubs; gate: *end‑to‑end happy path in dev*.
* **T−5 to T−3 (Alpha on Campus):** Buffer logic, dispute scaffold, orders snapshot, event logging; closed alpha with 20–30 users; gate: *request→paid mock ≥20%*, *on‑time returns ≥90%* (simulated holds).
* **T−2 (Beta Hardening):** Add itinerary/companion flows, match scoring, policy center; run β with 60–100 users; gate: *NPS ≥30*, *critical bugs ≤3*.
* **T−1 (Go/No‑Go):** Incident runbooks, SLAs, support macros, analytics dashboards, content launch kit; freeze day‑minus‑3; gate: *readiness checklist 100%*.

## Launch & Year‑1 Plan (T0 to T+12)

* **T0–T+1 (Launch & Stabilize):** Go‑live; daily standups/war room; fix P0/P1s; Orders UI; analytics funnels; PWA polish.
* **T+2–T+3 (Transact for Real):** Payment gateway live (hold/capture/release), receipts; risk monitoring; review prompts; gate: *real deposit success rate ≥95%*.
* **T+4–T+6 (Engage & Recommend):** In‑app messaging/notifications; **recommendations v1**; **reputation score v1**; club dashboards; gate: *repeat renter ≥30%*.
* **T+7–T+9 (Ops at Scale):** Locker pilot, Postgres migration cut‑over, CI/CD with e2e smoke; growth experiments (referrals, deposit sizing).
* **T+10–T+12 (Expand):** Campus #2 rollout; localization tweaks; insurance partner PoC; de‑risking playbook.

**Milestone KPIs**  
- **T−1 Readiness:** 60+ listings, 3+ clubs onboarded, knowledge base live.  
- **T+3:** GMV ₹1–1.5L/mo, request→paid ≥25%, dispute rate ≤2%.  
- **T+6:** GMV ₹2–3L/mo, repeat renter ≥35%, on‑time returns ≥95%.  
- **T+12:** 2 campuses live, GMV ₹5L+/mo, NPS ≥45, net dispute loss <0.7% GMV.

# 10. Conclusion

CampusTrail delivers a **trusted, campus‑verified marketplace** that unifies gear rentals, itinerary planning, and companion matching—closing a long‑standing fragmentation gap. By weaving **deposit lifecycle, QR/OTP handoffs, disputes, and reputation** into the core flows, the platform reduces risk and friction while improving affordability and sustainability. The roadmap focuses on payments, messaging, recommendations, and locker‑based operations to scale responsibly, positioning CampusTrail as the default **student travel hub** on campus and beyond.