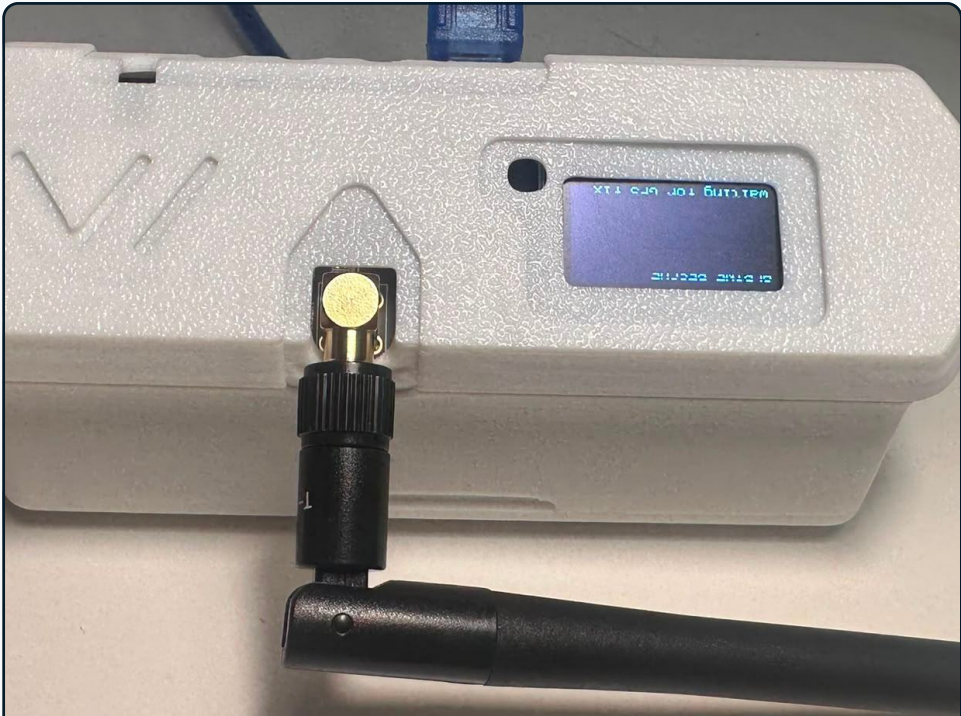


PROJECT-STAGE VENTURE

ALMATY / TRANS-ILI ALATAU

Mountain safety infrastructure, built for local rescue workflows.

A rental-first GNSS + LoRa safety system connecting a mountain user, local gateway infrastructure and an operator dashboard — designed for the terrain and economics of Almaty.



FINAL ENCLOSURE / POWERED MVP / INTERNAL EVIDENCE

US\$28.4k

PILOT CAPITAL ASK

pilot · certification · launch
operations

JUL 2027

TARGET PILOT

10–20 devices / 10+ users
operations

14.9–17.3

GROSS PAID DAYS

fully loaded direct-cost
recovery

94.1%

DEMAND SIGNAL

272 of 289 respondents

INVESTMENT THESIS

01

LOCAL FIT

868 MHz LoRa field link,
Almaty-first coverage and
integration path for local
operators.

02

ACCESS MODEL

Daily rental reduces the upfront
barrier for occasional hikers and
organized groups.

03

DATA LAYER

Trip context, GNSS telemetry,
alerts and last-known position
in one dashboard workflow.

04

SCALING LOGIC

Pilot → local issue points →
Kazakhstan / Kyrgyzstan →
broader Eurasian markets.

INVESTOR READING NOTE

ARS is presented as a project-stage venture with a LinkedIn presence. Institutional pricing, stakeholder participation and 2027–2030 scale figures are proposals, targets or founder-supplied assumptions unless explicitly marked verified. This document separates evidence from ambition.

OFFICIAL SOURCE / VERIFIED INPUT / TARGET / MODEL ASSUMPTION

MISSION ORIGIN / ONE LOST HIKER

Search time expands when identity, route intent and last-known position are fragmented.



FOUNDER INCIDENT / MOLODEZHNY PEAK

4,147 m

Alisher reports becoming lost during a climb and being found by rescue services after approximately 26 hours. The experience became the mission trigger for ARS.

ARS aims to make location discovery materially faster; “15 minutes” is a pilot response target, not a historical fact.

THE OPERATING GAP

01 / NO SHARED TRIP CONTEXT

Route, expected return, identity and emergency contact may live in separate messages or nowhere.

02 / LOCATION SEARCH

Founder-supplied operational summary places location discovery at 3.5–5 hours in emergency cases.

03 / LOCAL ECONOMICS

Premium satellite hardware and subscriptions are difficult to justify for occasional users.

04 / RESPONSE INTERFACE

A rescue workflow needs readable alerts, telemetry age and last-known position — not only a consumer map.

OFFICIAL MCHS SAFETY BASELINE / SOURCE FILES HELD BY ARS

7
reported fatalities

449
reported injury incidents

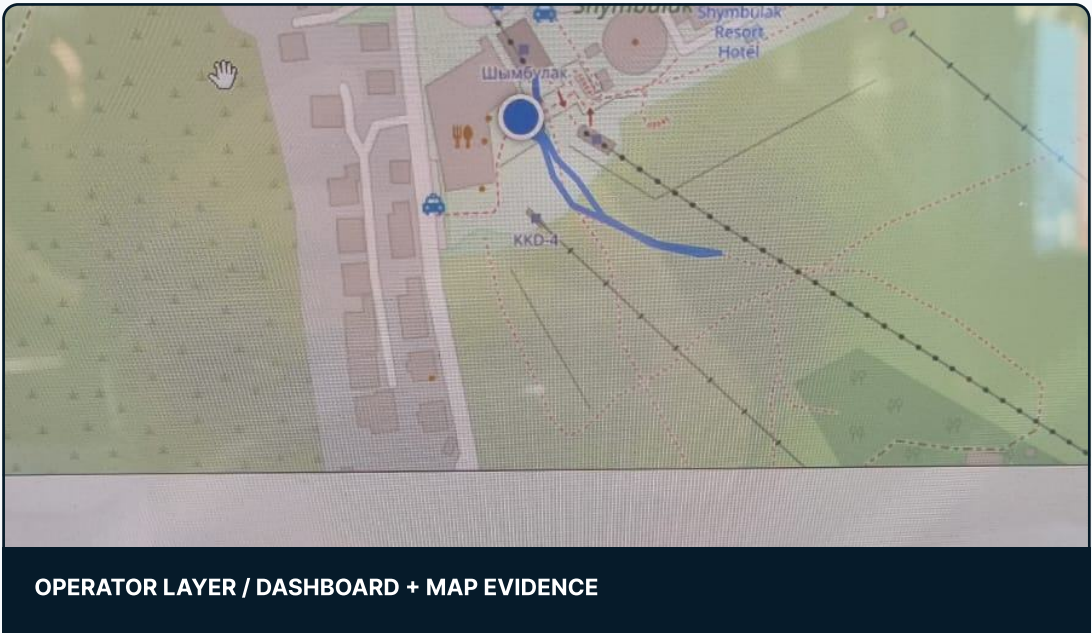
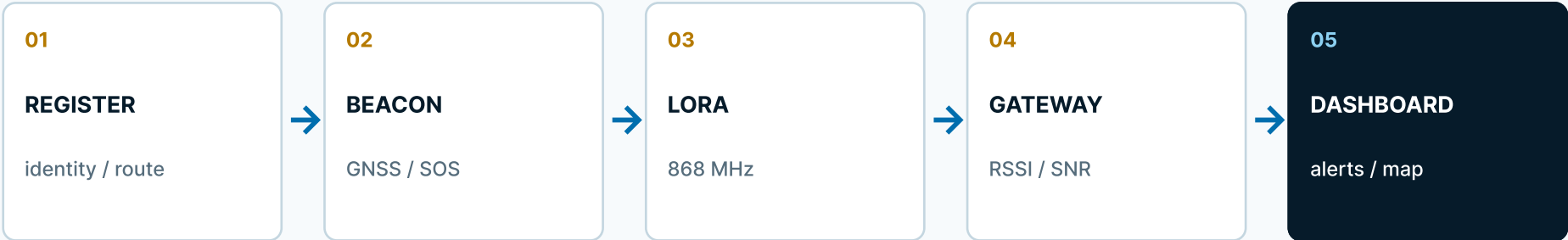
≈2,000
reported near-risk cases

SOURCE / Official MCHS Almaty safety data supplied to ARS. Underlying files are retained in the internal project evidence archive.

PRODUCT / OFFLINE-FIRST SAFETY WORKFLOW

A local telemetry layer from the traveler to the operator.

The MVP combines pre-trip registration, a wearable GNSS + LoRa beacon, receiver/gateway infrastructure, backend logic and a dashboard that preserves last-known context when the field link becomes stale.



PRODUCT DEFINITION

CURRENT MVP	GNSS location · manual 5 s SOS · OLED status · 868 MHz LoRa · QR trip registration · dashboard alert states
NEXT SOFTWARE LAYER	route tracking · catalog of popular peaks starting in Almaty · route categories · smart client-state assessment
MVP BOUNDARY	Not a certified distress beacon. No satellite communication, guaranteed all-terrain link or automatic rescue dispatch is claimed.
48-60 H PROJECTED RUNTIME	Battery endurance is specified as 48-60 hours and remains subject to controlled validation.

VALIDATION / INTERNAL FIELD BASELINE

Evidence exists across hardware, radio and field deployment.

The current record demonstrates an experimental end-to-end MVP. Metrics below are taken from the Technical Information Pack; endurance remains projected until a controlled 48–60 hour run is logged.

169 / 180

PACKETS RECEIVED

93.9%

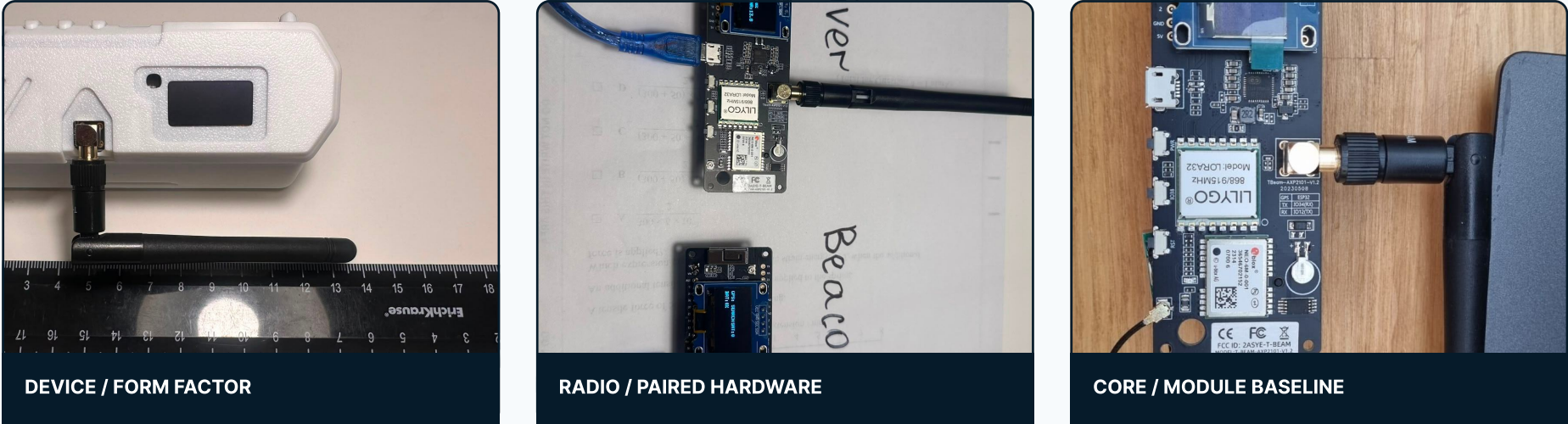
AGGREGATE DELIVERY

4,180 m

MAX RECORDED SEPARATION

48–60 h

PROJECTED RUNTIME



READINESS BY LAYER

HARDWARE	ASSEMBLED	Enclosure, battery, OLED, SOS input, LoRa antenna and mounting documented.
RADIO	FIELD-TESTED	Six documented stations; packet delivery and link separation logged.
SOFTWARE	INTEGRATED	Registration, backend association, alerts and map dashboard demonstrated.
PRODUCTION	NOT CERTIFIED	Environmental, endurance, EMC/radio and operational SOP validation remain.

EVIDENCE STANDARD / Store raw logs, test configuration, coordinates, date, operator and pass/fail criterion for every external claim.

USER RESEARCH / N = 289

Demand signal is strong; commercialization still needs a paid pilot.

272 / 289

SAID THEY NEED
A DEVICE LIKE THIS

94.1%

RESPONDENT PROFILE

Experienced hikers and climbers recruited through FH Climbers, Rabotyagi, Young Life, Alpine Asia Team, ALA Climbers, Almaty Mountaineering Federation, MCHS, EcoWay and people completing 3,000 m+ routes at least annually.

AVG MAX ALTITUDE 3,962 m / AVG FREQUENCY 1.29 TRIPS / MONTH

RESPONSE DASHBOARD



WILLINGNESS TO PAY / DAILY RENTAL

TESTED DAILY OPTIONS / US\$1.18 · 1.57 · 1.96 · 3.92 · 4.90 · 5.88

US\$2.82 / day

PROPOSED LAUNCH BAND / US\$2.94–3.43 / DAY

AVERAGE RESPONDENT VALUE

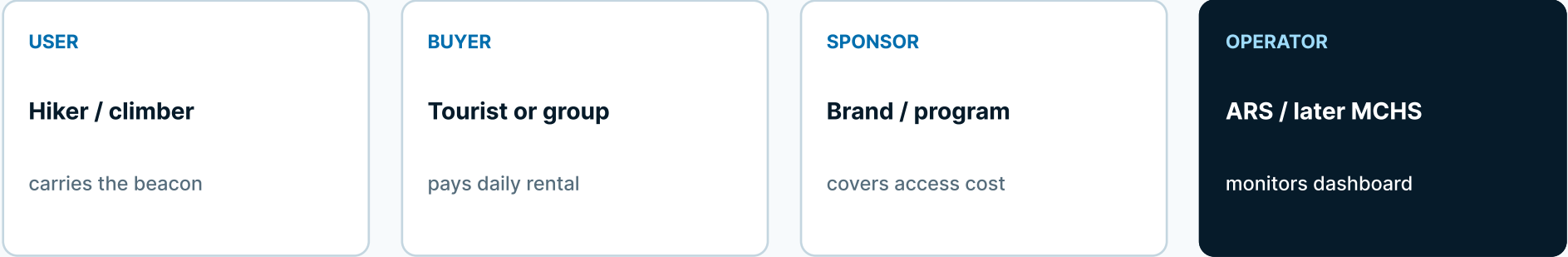
METHOD LIMITS

Convenience sample from mountain communities; self-reported intent; no completed paid transaction test yet. Next proof gate: 10+ users, deposit/protection terms, usage logs and post-trip NPS during the July 2027 pilot.

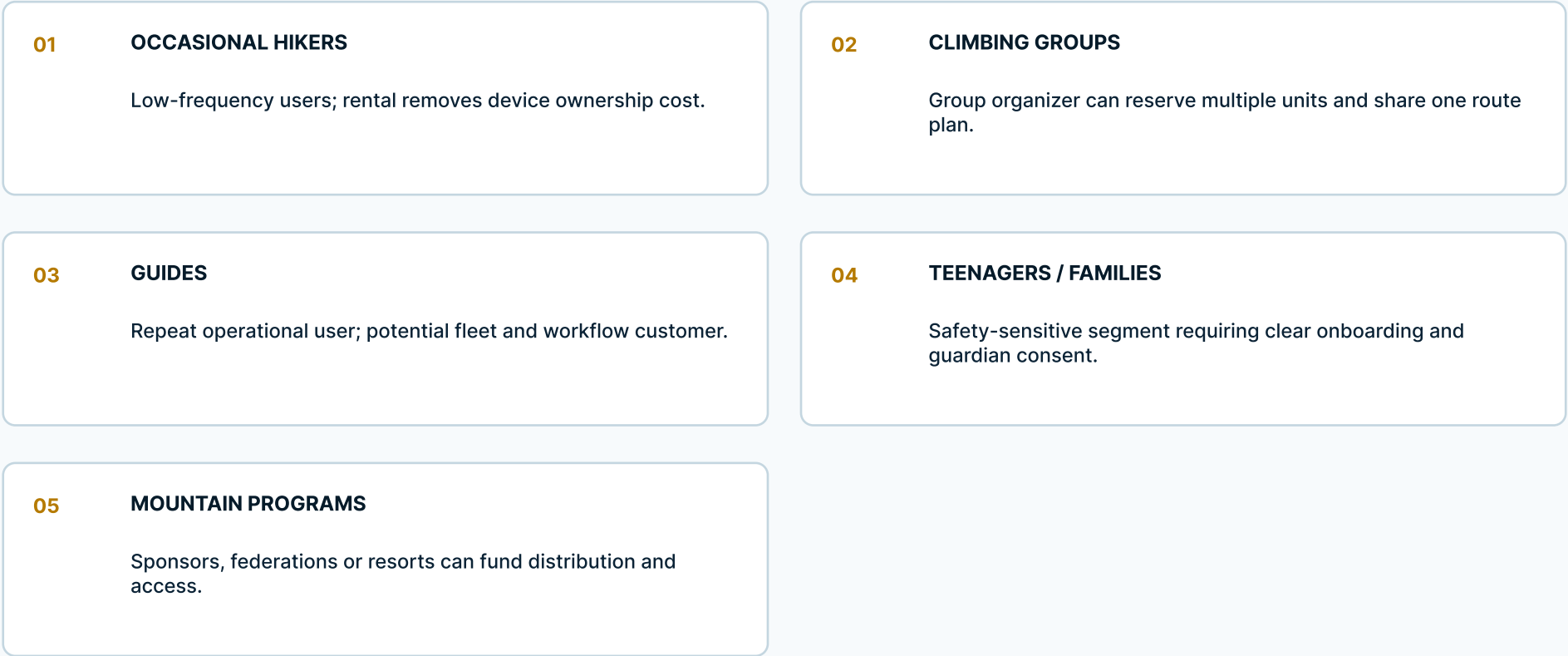
CUSTOMERS / PAYERS / OPERATORS

The user is the traveler; the payer can be the traveler or a sponsor.

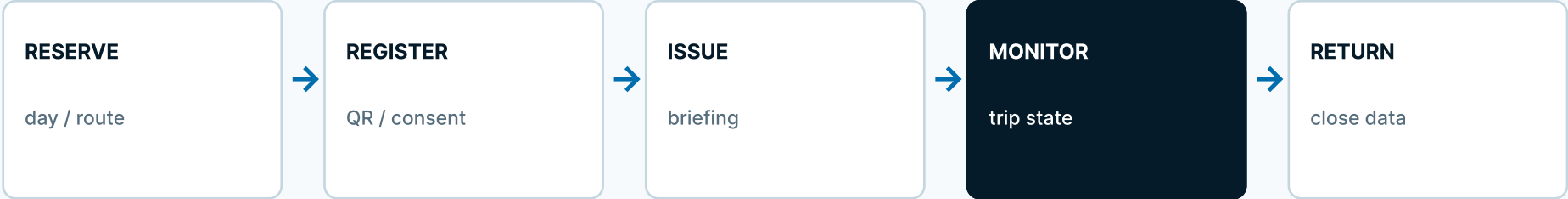
ARS is designed around short-duration access: reserve for one route, register the trip, carry the beacon, return it and close the data record.



PRIORITY SEGMENTS



RENTAL JOURNEY



TERM PRINCIPLE

One-day rental by default; multi-day issue follows the declared route. Users aged 14–17 require parental agreement. Monitoring ends and trip-location data is deleted at trip closure. Access is limited to ARS and MCHS. ARS accepts service responsibility for mapped local signal gaps; no universal terrain link is promised.

MARKET / BOTTOM-UP ACTIVITY VIEW

Almaty provides a concentrated pilot market before geographic expansion.

ARS begins with Trans-Ili Alatau routes, where concentrated visitor flows, local issue points and rescue infrastructure can support a controlled service model.

OFFICIAL MCHS MOUNTAIN TRAFFIC / PEOPLE PER DAY

SUMMER / WEEKEND	SUMMER / WEEKDAY	WINTER / WEEKEND	WINTER / WEEKDAY
14k–16k	2k–2.5k	800–900	100–150
highest activity	repeat demand	seasonal base	low-season floor

SOURCE / Official MCHS activity data supplied to ARS. The same evidence archive includes the 2030 expectation of 28,000–30,000 visitors. Geography: Almaty mountain routes / Trans-Ili Alatau.

MARKET LADDER

TAM / CATEGORY	Outdoor safety and location services for hikers, climbers and guided groups.	NOT SIZED HERE
SAM / LAUNCH REGION	Targeted service coverage of 85–90% of priority paths, parks, peaks and clearings across Almaty / Trans-Ili Alatau.	COVERAGE TARGET
SOM / OPERATING PLAN	40 devices in 2027 → 700 in 2028 → 5,500 in 2029 → 10,000 in 2030 across Kazakhstan and Kyrgyzstan.	FOUNDER PLAN

DEVICE SCALE PATH

2027	2028	2029	2030
40 DEVICES	700 DEVICES	5,500 DEVICES	10,000 DEVICES

BUSINESS MODEL / RENTAL-FIRST

Daily access monetizes safety without forcing device ownership.

The model combines daily rental, optional damage protection, direct and wholesale hardware sales, and an institutional dashboard subscription. All figures are presented in USD using the single portfolio FX basis on page 13.

DAILY RENTAL PRIMARY US\$2.94–3.43 PER DAY / RENTAL-FIRST ACCESS	DAMAGE PROTECTION OPTION US\$0.88 PER DAY / OPTIONAL DAMAGE PROTECTION
RETAIL DEVICE DIRECT US\$78.43 DIRECT RETAIL / DEVICE	WHOLESALE DEVICE B2B US\$64.71 WHOLESALE / DEVICE

PROPOSED INSTITUTIONAL DASHBOARD	
US\$882.35 SUMMER / MONTH US\$7,921.57 / YEAR	US\$549.02 OFF-SEASON / MONTH illustrative 4 summer + 8 off-season months · proposed / not contracted

REVENUE STACK / RESPONSIBILITY

RENTAL	traveler / sponsor	reservation, issue, return
PROTECTION	traveler	damage terms / claim handling
DEVICE SALE	consumer / partner	hardware delivery / warranty
DASHBOARD	institution	servers, maintenance, operator access

CUSTOMER TERMS / Optional US\$0.88/day damage protection covers accidental damage or failure. Without protection, or if the device is lost, client liability is capped at US\$47.06. Users aged 14–17 require parental agreement.

UNIT ECONOMICS / USD / FULL DIRECT COST

A US\$47.06 hardware BOM becomes US\$50.98 with direct assembly labor.

Soldering is included in the hardware BOM; the US\$3.92 direct-labor allocation is not. Margins and payback below use the combined direct build cost before tax, customer acquisition, downtime, servers and replacements.

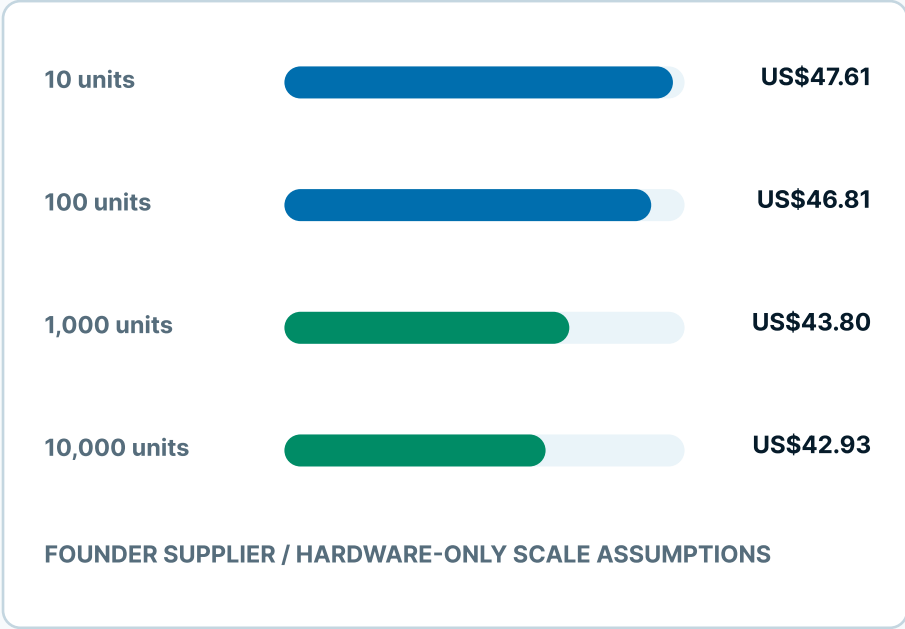
REPORTED BILL OF MATERIALS

T-Beam + LoRa + OLED + mount	US\$38.24
Samsung 18650 battery	US\$4.90
SOS input	US\$0.20
LED + resistor	US\$0.10
3D-printed enclosure	US\$0.39
Wiring + soldering	US\$1.96
QR label	US\$0.78
Other	US\$0.49
HARDWARE BOM	US\$47.06

OPERATING LOAD

ASSEMBLY	2.8 h / device
DIRECT LABOR ALLOCATION	US\$3.92 / device
SUMMER MAINTENANCE	US\$2.25 / month
OFF-SEASON MAINTENANCE	US\$1.90 / month

VOLUME COST CURVE



FULLY LOADED DIRECT MARGIN / PAYBACK

RETAIL DIRECT MARGIN	US\$27.45	35.0%
WHOLESALE DIRECT MARGIN	US\$13.73	21.2%
RENTAL DIRECT-COST PAYBACK	14.9–17.3	paid days

DIRECT COST BRIDGE / Hardware BOM US\$47.06 + direct assembly labor US\$3.92 = US\$50.98 fully loaded direct build cost. Soldering is already included in the BOM; no double counting remains.

COMPETITION / POSITIONING

ARS competes on local access and workflow — not satellite reach.

Garmin inReach remains the premium reference for satellite communication and global brand trust. ARS is a local, lower-entry rental service with a proposed rescue-operator interface.

CRITERION	ARS	GARMIN INREACH	PHONE ONLY
FIELD LINK	868 MHz LoRa	Satellite service	Cellular / GNSS
ACCESS MODEL	Daily rental	Device + recurring plan	Existing handset
LOCAL DASHBOARD	Core proposition	Consumer ecosystem	Not integrated
GLOBAL REACH	No	Yes	Network-dependent
BEST FIT	Local routes / groups	Remote global trips	Connected trails
PRIMARY RISK	Coverage + adoption	Cost + closed workflow	No service / battery

DEFENSIBILITY TO BUILD

LOCAL WORKFLOW

Trip registration, alert logic and a dashboard shaped with rescue operators.

DISTRIBUTION

Small issue points near popular gorges reduce pickup and return friction.

ROUTE DATA

Almaty-first route catalog and operating history improve local relevance.

ECONOMIC ACCESS

Rental and sponsor-funded access reach users who will not buy premium hardware.

SOURCE / Garmin official inReach Mini 2 and Consumer Plans pages, accessed 26 Aug 2026. Exact live prices intentionally omitted until issue-date verification.

GO-TO-MARKET / CONTROLLED PILOT

Prove behavior, operations and response workflow in July 2027.

10-20

DEVICES

10+

PILOT USERS

3

LAUNCH ZONES

≤15 min

TRIAGE TARGET

PILOT DESIGN

LOCATIONS	Trans-Ili Alatau · Shymbulak · Alma-Arasan
SUCCESS SIGNAL	Location visible in dashboard; alert reason and telemetry age readable.
RESPONSE TARGET	Operator triage / drone-location workflow within 15 minutes after SOS; target, not achieved result.
USER PROOF	Trip completion, return rate, instruction comprehension and post-trip feedback.

STAKEHOLDER CONTACT ESTABLISHED / FORMAL PILOT TERMS PENDING

MCHS ALMATY	workflow owner	CONTACT ESTABLISHED
SHYMBULAK	pilot access	CONTACT ESTABLISHED
ALMATY MOUNTAINEERING FEDERATION	user channel	CONTACT ESTABLISHED
ALMATY AKIMAT	public infrastructure	CONTACT ESTABLISHED
ILE-ALATAU NATIONAL PARK	site permission	CONTACT ESTABLISHED

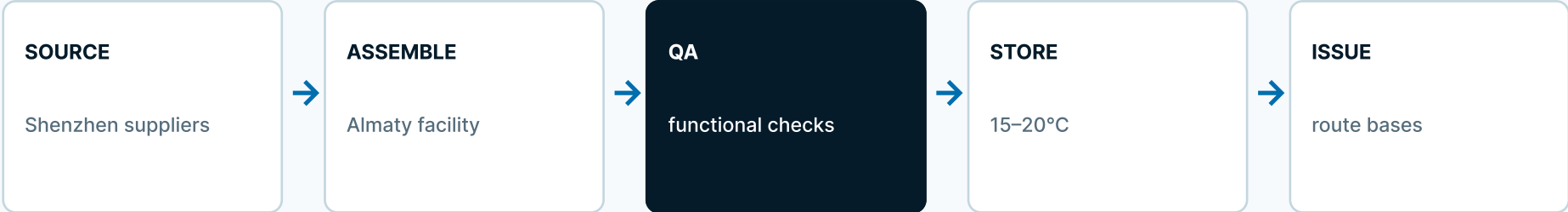
ACQUISITION / DISTRIBUTION

Marketing: paid media · image campaigns · mountain influencers. Distribution: small ARS issue points near rescue bases in popular gorges, subject to site and agency approval.

OPERATIONS / SUPPLY CHAIN / QUALITY

Source in Shenzhen, assemble and control the service in Almaty.

The operating model keeps final assembly, software, QA, storage, issuance and service records under ARS control while relying on imported electronics.



15–25 d

T-BEAM + LORA LEAD TIME

2.8 h

MANUAL ASSEMBLY / UNIT

98%

QA PASS TARGET

2–3

PLANNED OPERATIONS HIRES

CAPACITY CHECK

20 PILOT UNITS	56 assembly hours
40 UNITS	112 assembly hours
700 UNITS	1,960 assembly hours
5,500+ UNITS	serial process required

LIFECYCLE / FIELD LOSS

BATTERY	2 years	Samsung 18650 rating
ENCLOSURE	up to 5 years	founder estimate
BREAKAGE	≈4% / month	planning assumption
LOSS	<0.1% / month	planning assumption

CONTROL PLAN

INCOMING	supplier lot ID · visual inspection · power-on	FUNCTIONAL	GNSS fix · LoRa packet · SOS hold · OLED states
TRACEABILITY	device ID · assembly date · operator · test result	SERVICE	issue / return scan · damage state · battery cycle · repair log

PRE-SCALE GATE / Reported 868 MHz authorization, product certification, customs process and written QA acceptance criteria must be documented before serial production.

FINANCIAL PLAN / CAPITAL GATES

Scale becomes capital-intensive before the network can self-fund growth.

US\$28.4k

PILOT CAPITAL REQUIREMENT

END 2029

OPERATING BREAK-EVEN TARGET

US\$784

FOUNDER-FUNDED SPEND / DEPLOYED

WORKING PILOT ALLOCATION / US\$28,431

Hardware	US\$3,412	12%
Pilot base + logistics	US\$6,824	24%
Certification + compliance	US\$5,686	20%
Software + server	US\$5,118	18%
Staffing + training	US\$4,265	15%
Marketing + research	US\$2,275	8%
Contingency	US\$851	3%
Working allocation for a 20-device pilot and launch infrastructure; replace with dated supplier, certification and site quotes.		

FOUNDER SCALE PLAN / CASH REQUIREMENT

YEAR	DEVICES	HW UNIT	HW CASH
2027	40	US\$47.61	US\$1.90k
2028	700	US\$46.81	US\$32.77k
2029	5,500	US\$43.80	US\$240.92k
2030	10,000	US\$42.93	US\$429.31k
Hardware procurement only; excludes direct labor, issue bases, servers, certification, customs, working capital and replacement reserve.			

ILLUSTRATIVE GROSS RENTAL REVENUE / NOT PROFIT

2027

75 days

US\$8.82k

2028

110 days

US\$226.47k

2029

125 days

US\$2.022m

2030

135 days

US\$3.971m

FX + MODEL BASIS

510 KZT = US\$1. Base rental rate US\$2.94 per paid day; paid days shown above. 2030 scenarios: US\$3.09m downside / US\$3.97m base / US\$5.00m upside. Revenue excludes tax, downtime, maintenance, staffing and capital financing.

CAPITAL SEQUENCE

Founder-funded work to date: US\$784, fully deployed. Current pilot requirement: US\$28.4k. Maximum pilot loss tolerance: US\$980. External capital / sponsor participation supports scale through 5,500 units; reinvestment funds the path to 10,000.

RISK / GOVERNANCE / IMPACT

Safety infrastructure requires explicit controls, not only strong technology.

PRIORITY RISK REGISTER

OPERATOR ATTENTION	HIGH	HIGH	alert escalation · audit log · named duty owner
COVERAGE GAPS	HIGH	HIGH	coverage map · stale-data state · last-known position
THEFT / LOSS	MEDIUM	MEDIUM	verified ID · issue/return scan · clear terms
CUSTOMS / SUPPLY	MEDIUM	HIGH	buffer stock · dual suppliers · staged orders
CERTIFICATION / FUNDING	HIGH	HIGH	regulatory gate · milestone-based capital

DATA / LIABILITY GOVERNANCE

MINIMUM AGE	14+ · parent agreement until 18
MONITORING	ends at trip closure
DATA ACCESS	ARS + MCHS only
DATA DELETION	at trip closure
SIGNAL GAPS	ARS responsibility in mapped coverage

IMPACT TARGETS / NOT YET MEASURED

95%	fewer loss incidents
83%	easier search workflow
NEAR-REAL-TIME	location when link is available
2.5%	revenue to forest / cleanup

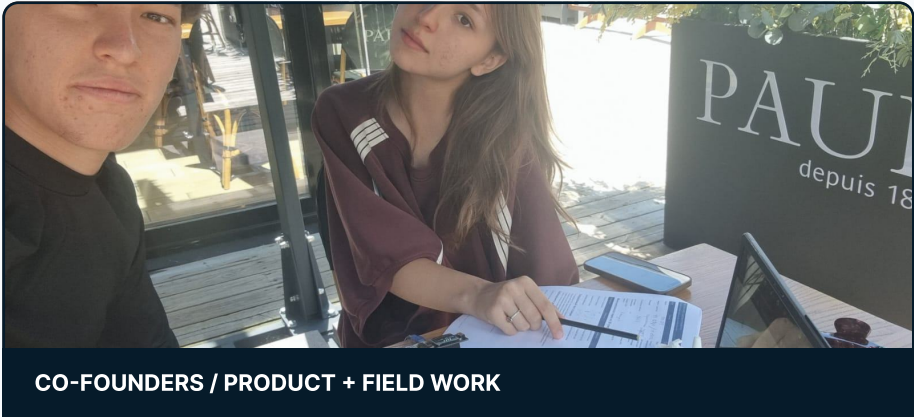
RESPONSIBLE GROWTH

SDG 3 GOOD HEALTH safer outdoor participation	SDG 9 INNOVATION local safety infrastructure	SDG 11 COMMUNITIES resilient mountain access	SDG 15 LIFE ON LAND cleanup and restoration
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OPERATING POLICY / Consent is captured through the site or app. Access, deletion, minor-use and local coverage responsibilities are defined above and must be reproduced in customer and institutional agreements.

TEAM / FUNDING / NEXT GATE

Two equal co-founders; complementary ownership across hardware and software.



≈255–260 h

CONTRIBUTED BY EACH FOUNDER

Shared ownership: strategy · outreach · testing · product decisions.

FOUNDERS / DETAILED RESPONSIBILITY

ALISHER BALBAYEV

CO-FOUNDER / HARDWARE + FINANCE

Owns unit economics, supplier and funding logic, physical assembly, hardware architecture and field readiness. The Molodezhny Peak incident grounds the mission in lived operational need. Leads commercial modeling and hardware scale planning.

LINKEDIN / [linkedin.com/in/alisher-balbayev-11a649318](https://www.linkedin.com/in/alisher-balbayev-11a649318)

ALINA AKYLOVA

CO-FOUNDER / SOFTWARE + DESIGN

Owns firmware, product design, backend architecture, websites and the operator-facing software layer. Translates field telemetry into understandable states and supports the digital ecosystem required for registration, routes and future client-state assessment.

LINKEDIN / [linkedin.com/in/alina-akylova-716513395](https://www.linkedin.com/in/alina-akylova-716513395)

EXTERNAL INPUT

Founders report conversations or input from engineers linked to Garmin, GE, Apple and Chinese manufacturers, plus experienced climbers. Names, scope and permission must be verified before an “advisor” claim.

CURRENT FUNDING GATE

US\$28.4k

US\$28,431 / FULL PILOT REQUIREMENT

Funds hardware + spares, the first issue base, servers and software, one launch hire, certification and compliance, marketing research and contingency.

NEXT INVESTABLE GATE

JULY 2027 PILOT

Required proof: paid user behavior, documented coverage, response SOP, certified hardware path, signed pilot terms, actual COGS and measured operational performance.

10–20 DEVICES / 10+ USERS

SOURCE REGISTER / EXTERNAL ISSUE BASIS

1 ARS Technical Information Pack V1.0 · 2 Survey source files / n=289 · 3 Official MCHS activity + incident archive · 4 Stakeholder contact records · 5 Supplier and certification evidence · 6 Garmin official product + plans

PROJECT / ALPINE RESCUE SYSTEM · LINKEDIN / FOUNDERS ABOVE · ALMATY, KAZAKHSTAN