Idea8 WE CREATE YOUR IMAGINATION

SAMPLE REPORT — ILLUSTRATIVE

Every real Sprint delivers this exact structure — for your product, your numbers, your constraints.

Feasibility Sprint Report

TrackPoint — connected asset-tracking device (LTE-M / GNSS)

VERDICT: FEASIBLE — WITH CONDITIONS

PROJECT	TrackPoint (sample)	CLIENT	[redacted in samples]
SPRINT WINDOW	5 business days	PREPARED BY	Engineering Lead, Idea8
REVIEWED BY	Principal, Idea8	DISTRIBUTION	Prospective clients — public sample

DEVELOPMENT	TIMELINE	UNIT COST	TOP RISK
$68k – $96k	8 – 12 months	$25.40 @ 5k	Carrier cert

ORIENTATION

00 How to read this sample

This is a sample Feasibility Sprint report for an illustrative product — a connected asset tracker — published so you can judge the depth, structure, and honesty of the deliverable before paying for one. It is not a real client engagement; client-identifying details appear redacted exactly as they would in any shared excerpt. Every real Sprint follows this structure with your product and your numbers, adds a 30-minute kickoff to capture requirements, and ends in a 45-minute readout with the engineer who wrote it.

EXECUTIVE SUMMARY

01 TrackPoint: LTE-M asset tracker for high-value field equipment

VERDICT

FEASIBLE — WITH CONDITIONS

Buildable with current, available silicon and a conventional certification path. Conditional on three pre-Phase-1 decisions: reporting cadence (battery life pivots on it), launch markets (carrier-cert scope), and mounting environment (antenna design).

DEVELOPMENT	TIMELINE	UNIT COST	TOP RISK
$68k – $96k	**8 – 12 mo**	**$25.40 @ 5k**	**Carrier cert**
concept to PVT exit · engineering fees	to production-ready	fully burdened COGS	6–10 wks · the long pole

Key findings. (1) A single-SiP architecture (Nordic nRF9151) collapses MCU, cellular modem, and GNSS into one pre-certified module — the largest single lever on cost, size, and certification scope; the same silicon adds NB-NTN satellite capability for a future dead-zone variant. (2) Battery life is a product decision, not an engineering one: 4 reports/day yields ~17 months on the chosen cell; 24/day collapses it to ~3 months. (3) The IP67 enclosure with internal antennas is feasible, but antenna performance near large metal assets is the dominant technical risk — OTA chamber testing is scheduled in EVT, not after. (4) Injection-mold tooling ($28–45k, at cost) is the largest non-engineering line and gates the PVT date. (5) Nothing here requires invention; the risk profile is execution and certification, not research.

02

WHY NOW

Market & connectivity landscape

Demand context. Industry analysts size the global asset-tracking market at roughly $32B in 2026, heading toward ~$54B by 2031, with cellular LPWA (NB-IoT / LTE-M) tracked as the fastest-growing connectivity segment (Mordor Intelligence, 2026). TrackPoint enters a category with proven willingness to pay — differentiation comes from battery honesty, mounting-tolerant RF, and an ownable dashboard rather than from inventing demand.

> The sunset tailwind. Legacy cellular is disappearing under deployed trackers: GSA counted 300+ completed, planned, or in-progress 2G/3G switch-offs across 88 countries by end-2025, with 130+ operators committed to retiring 2G (via Spenza, 2026). Meanwhile 4G LTE — which LTE-M rides on — is expected to remain in service into the 2030s–2040s. Every bricked 3G tracker in the field is a replacement sale; LTE-M is the safe horse for this product's lifetime.

Radio technology decision — evaluated for this product class:

Option	Power	Mobility / roaming	Module cost	Fit for TrackPoint
LTE-M (chosen)	Excellent (PSM/eDRX)	Designed for mobile assets; mature US/EU roaming	$	PRIMARY — coverage, power, and cert path all align
NB-IoT	Excellent	Weak for moving assets; handover limits	$	Fallback profile only (same SiP, config change)
LTE Cat-1bis	Fair (mains-ish duty)	Universal 4G footprint	$$	Right answer for video/voice trackers — not 12-mo battery
LoRaWAN	Best-in-class	Private/regional networks; no global roam	$	Campus variant later; not a national fleet
NB-NTN satellite	Good (burst)	Global incl. dead zones	$ (same SiP)	Optional Phase-2 variant — nRF9151 already supports it

SIM strategy. The chosen SiP supports soldered eSIM and software iSIM (nuSIM). Recommendation: iSIM-first — it deletes the SIM slot (one less IP67 sealing penetration), drops a BOM line, and enables remote carrier-profile switching for multi-region fleets.

SCOPE

03 Product concept & requirements captured

In one paragraph: a palm-sized, IP67-rated tracker that attaches to high-value field equipment (trailers, generators, containers), reports location and movement over LTE-M several times daily, runs 12+ months on a battery, and is field-provisioned over BLE from a phone. A web dashboard shows live fleet position, geofence alerts, and battery state.

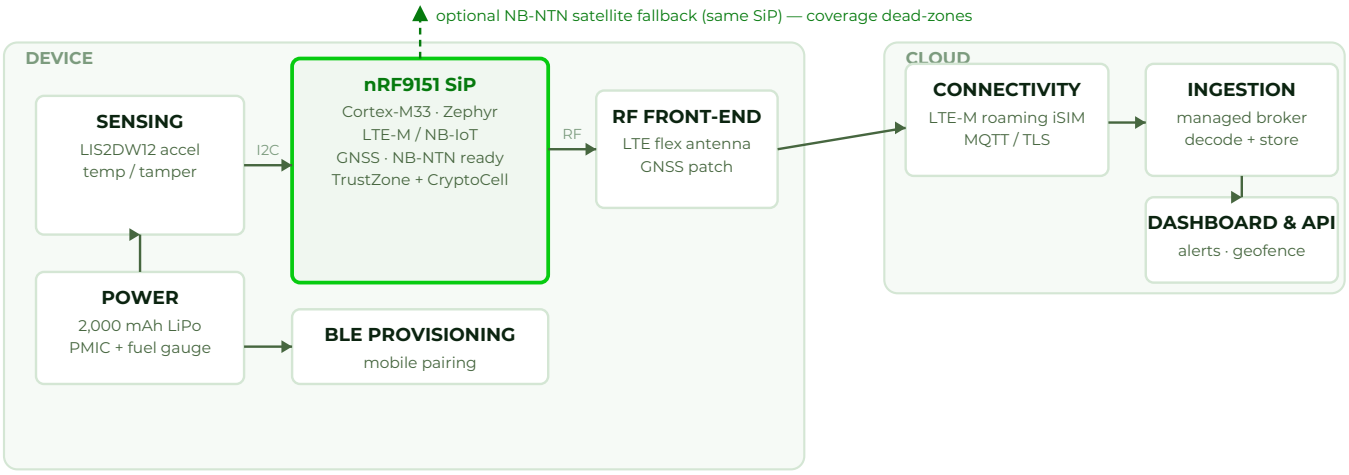
Priority	Requirement	Engineering note
MUST	Location over cellular, no Wi-Fi dependency	LTE-M primary, NB-IoT fallback profile
MUST	12+ months battery at default cadence	Met at 4 reports/day — power budget, §6
MUST	IP67, −20 °C to +60 °C operating	Sealed enclosure, no external connectors; iSIM removes SIM door
MUST	Field provisioning without tools	BLE + minimal mobile app
SHOULD	Motion-triggered reporting (theft alert)	Accelerometer wake interrupt — included
SHOULD	US + EU coverage at launch	Drives carrier-cert scope — §9
COULD	Temperature logging (cargo variant)	Sensor footprint reserved; firmware later
COULD	Dead-zone coverage variant	NB-NTN satellite on same SiP — Phase-2 option
OPEN	Mounting: magnetic vs bolt-on vs strap	Affects antenna keep-out & enclosure design

Open items are resolved in the readout call; anything unresolved becomes an explicit Phase-1 assumption with a cost range attached.

SYSTEM ARCHITECTURE

04 One module where three used to be

The architecture centers on Nordic's nRF9151 system-in-package: a 64 MHz Cortex-M33 application core (1 MB flash / 256 KB RAM), LTE-M/NB-IoT modem, and GNSS in one pre-certified module, with TrustZone + CryptoCell for the secure-boot/OTA posture EU radio rules now expect. The discrete alternative — MCU + cellular module + GNSS receiver — adds ~$6–9 to BOM, ~30% board area, and re-opens certification scope. We recommend the SiP without reservation for this product class.



Subsystem	Decision	Rationale
Cellular + GNSS + MCU	BUY — nRF9151 SiP	Pre-certified module inherits FCC/CE modular + PTCRB groundwork; NB-NTN headroom for free
Device firmware	BUILD — Zephyr RTOS	Power management and OTA are product-defining; vendor SDKs insufficient
Cloud ingestion	BUY managed MQTT + thin decode	No reason to own broker infrastructure at this scale
Dashboard & API	BUILD	The customer-facing value; off-the-shelf trackers lock you into their portal
Provisioning app	BUILD — minimal	Single-purpose BLE pairing, ~3 screens, both platforms
Enclosure	BUILD — custom IP67	Mounting + antenna constraints rule out off-the-shelf housings

05

KEY COMPONENTS

Selection with supply reality in mind

Function	Part	Why this one	Supply risk
MCU + LTE-M + GNSS	Nordic nRF9151 SiP	Single pre-certified module; mature Zephyr support; Power Class 5 (20 dBm) option eases battery design; NB-NTN & iSIM-ready	LOW — multi-distributor
Motion sensing	ST LIS2DW12	Ultra-low-power wake interrupt; commodity part	LOW
Power management	TI BQ24074 + fuel gauge	Proven charge path; accurate state-of-charge for UX	LOW
Battery	2,000 mAh LiPo, IEC 62133 cell	Certified cell shortens compliance; −20 °C-rated chemistry	MED — 2nd source qualified in EVT
Antennas	LTE flex + GNSS patch	Internal antennas preserve IP67; tuned to enclosure in EVT	LOW — design risk, not supply

Platform note (current as of this sample's research pass). The nRF9151 is the volume successor in Nordic's nRF91 line — 20% smaller than the nRF9160 generation, with identical modem firmware lineage, dual power-class radio, and NB-NTN satellite support in the same package (Nordic Semiconductor). Designing on it buys roadmap headroom: a satellite-fallback SKU later requires firmware and antenna work, not a board respin.

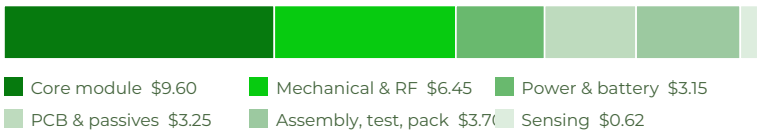
06

UNIT ECONOMICS

Bill of materials — fully burdened, at 5,000 units

Line item	Detail	Cost @5k
Core module	nRF9151 SiP	$9.60
Sensing	Accelerometer + temp	$0.62
Power	PMIC, charger, fuel gauge, protection	$0.95
Battery	2,000 mAh certified LiPo	$2.20
RF	LTE flex antenna + GNSS patch	$2.20
PCB	4-layer, ENIG, ~38×52 mm	$1.85
Passives & misc	Connectors, seals, hardware	$1.40
Enclosure	IP67 molded, 2-part + gasket	$2.85
Assembly & test	SMT, box build, functional + RF test	$2.80
Packaging	Retail-minimal, regulatory labeling	$0.90
TOTAL COGS		$25.37

COGS COMPOSITION @ 5,000 UNITS — $25.37



Core module $9.60 · Mechanical & RF $6.45 · Power & battery $3.15 · PCB & passives $3.25 · Assembly, test, pack $3.7(· Sensing $0.62

UNIT COGS vs VOLUME

Operating cost per device / year	Low	High	Note
Cellular data (LTE-M plan)	$7	$17	$0.60–1.40 / device / month, carrier-deal dependent
Cloud share @ 5k fleet	$0.50	$1.50	$200–600 / month total, amortized
Run-rate TCO / device / yr	~$8	~$19	excludes support & warranty reserve

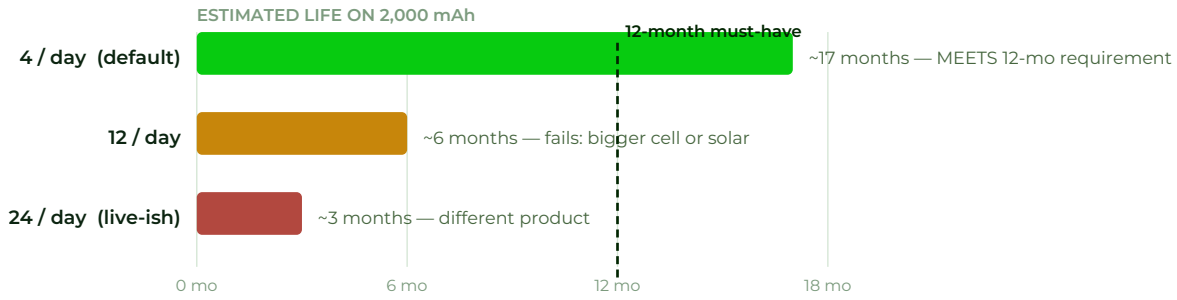
Excluded from COGS by design: injection-mold tooling ($28–45k one-time, at cost) and certification fees (§9). A $89–119 retail or $6–9/mo SaaS bundle clears healthy margin at 5k+; we pressure-test pricing with you in the readout.

07

POWER BUDGET

Battery life is a cadence decision — here is the math

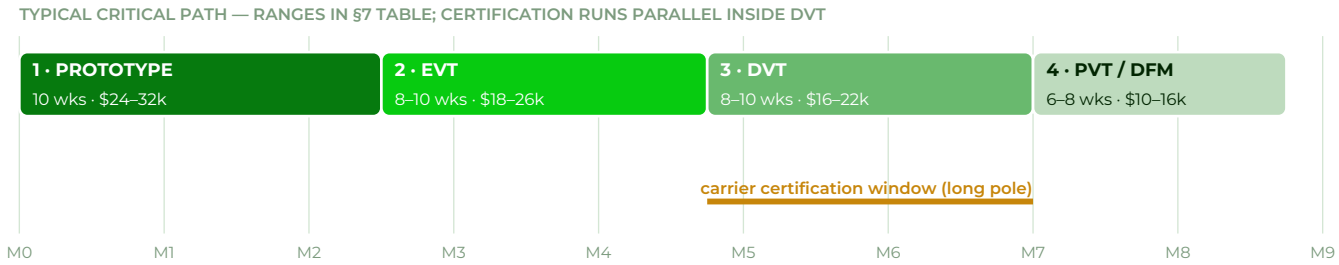
Event	Current	Duration	Charge per event
Deep sleep (continuous)	8 µA	24 h/day	0.19 mAh/day
GNSS fix (warm)	45 mA	~30 s	0.38 mAh
LTE-M connect + TX report	220 mA avg	~8 s	0.49 mAh
BLE provisioning session	12 mA	on demand	negligible amortized



Recommendation: ship at 4 reports/day with motion-triggered burst mode — accelerometer wake switches to a temporary 15-minute cadence while the asset moves. Users get live tracking exactly when assets move (which is when they care) without paying for it in battery the other 95% of the time.

ROADMAP & BUDGET

08 Phase-gated: you approve each phase against its exit criteria



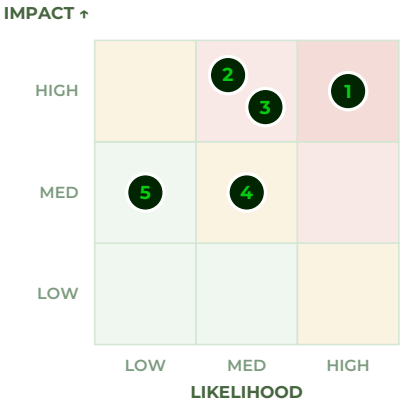
Phase	Duration	Budget	Exit criteria / what you get
1 · Prototype	10 wks	$24–32k	Custom PCB rev A, firmware bring-up, end-to-end demo device → cloud → dashboard. Exit: core function proven on real hardware.
2 · EVT	8–10 wks	$18–26k	Rev B boards (×20), enclosure T0 prints, OTA antenna chamber test, environmental screening. Exit: meets spec in lab conditions.
3 · DVT	8–10 wks	$16–22k	Pre-cert testing, 50-unit field pilot for battery validation, reliability/abuse testing. Exit: certifiable and field-proven.
4 · PVT / DFM	6–8 wks	$10–16k	Tooling kickoff support, factory test fixtures, golden samples, CM line bring-up. Exit: first lot passes outgoing QA.
TOTAL	8–12 mo	$68–96k	Engineering fees. Tooling ($28–45k) and cert lab fees (§9) at cost, no markup.

Why ranges, not a single number: the spread closes as the open requirements (§3) are resolved. The readout walks exactly which decisions move you toward the bottom or top of each range — the budget tightens before you commit, not after.

09

RISK REGISTER

The five things most likely to hurt this project



#	Risk	L / I	Mitigation — scheduled, not hoped for
1	Carrier certification lead time (PTCRB/GCF + carrier-specific)	HIGH / HIGH	Pre-certified module shrinks scope; book lab slot at EVT exit; run cert parallel with DVT, never after it.
2	Antenna detuning on/near large metal assets	MED / HIGH	Ground-plane-tolerant antenna design; OTA chamber test with representative mounting in EVT; mounting guidance in docs.
3	Battery misses target in real coverage conditions	MED / HIGH	50-unit field pilot across coverage classes in DVT; adaptive retry/backoff; cadence configurable over the air.
4	Mold tooling lead time (8–12 wks) gates launch	MED / MED	Freeze enclosure at EVT exit; kick off T1 tooling during DVT; bridge with cast-urethane housings if needed.
5	Cellular module supply / price shift mid-program	LOW / MED	Multi-distributor sourcing; footprint reviewed against nRF9151 variants; BOM re-quote at every phase gate.

CERTIFICATION & COMPLIANCE

10 US + EU launch scope

Requirement	Scope for TrackPoint	Est. cost	Timeline impact
FCC (US)	End-product testing under module's modular approval	$6–9k	3–4 wks, inside DVT
CE / RED incl. EN 18031 (EU)	EMC + radio + safety + radio-cybersecurity, leveraging module reports; secure boot/OTA architected from day one	$6–10k	3–5 wks, parallel
PTCRB / carrier	Required for LTE-M on US carriers; module inherits most	$3–5k	6–10 wks — the long pole
Battery (IEC 62133 / UN 38.3)	Certified cell + transport testing	incl. above	Cell choice avoids new cert

Total certification budget: $15–24k lab fees, at cost. The structural decision keeping this small is the pre-certified module — a discrete-modem design roughly doubles the line and adds a quarter to the schedule.

ASSUMPTIONS & EXCLUSIONS

11 Written down so nobody discovers them in month six

Assumed: single SKU at launch; US + EU markets only; client supplies industrial-design direction or approves ours; cloud hosted on the client's account (you own the infrastructure); CM from our qualified shortlist or your existing partner; §3 requirements resolved before Phase-1 kickoff.

Excluded from these figures: mold tooling and certification lab fees (at cost, estimated above); cellular data contracts; app-store accounts and recurring cloud hosting (~$200–600/mo at 5k devices); patent/FTO legal work; medical, ATEX, or other regulated-domain compliance — this is not a regulated device.

12

RECOMMENDED NEXT STEPS

If this were your product, here is Monday

1. Resolve the three conditional decisions — cadence, markets, mounting — in one working session. 2. Approve Phase 1 against the §8 exit criteria. 3. Lock long-lead items in week one: module reels, certification lab slot, battery-cell qualification. 4. First end-to-end demo on real hardware lands ~10 weeks after kickoff.

PREPARED BY	REVIEWED BY
[Engineering Lead — name] Engineering Lead, Idea8 In a real Sprint, this is the engineer who runs your readout call — and your build.	[Reviewer — name] Principal, Idea8 Every report is reviewed by a second senior engineer before it reaches you.

This sample is published by Idea8 to show prospective clients exactly what a $495 Feasibility Sprint delivers. Your report covers your product, under NDA, with a 45-minute readout — and your $495 is credited in full against the build. Nothing here constitutes a quotation for the sample product. Market and platform facts referenced from public sources (Mordor Intelligence; GSA via Spenza; Nordic Semiconductor), accessed June 2026.