TICK MARK

Smart Attendance For a Safe Education

PROJECT REPORT

VisioNEX 2026 — Grand Finale

Team NANDIANS WEB-X

G/Sri Devananda College

Field	Detail
Product	Tick Mark — school attendance and student-safety platform
SDG alignment	SDG 4 (Quality Education)
Platform	Progressive Web App + native Android application
Live deployment	https://tick-mark.web.app
Landing page	https://tickmark.online (APK download)
Primary research	4,424 survey responses, Sri Lanka
School	G/Sri Devananda College
Team	NANDIANS WEB-X
Report date	30 July 2026

The Team

Tick Mark was designed, built and researched by Team NANDIANS WEB-X of G/Sri Devananda College for the VisioNEX 2026 Grand Finale.

Member	Role
B.H. Manuka Daham Induwara	Team Leader & UI/UX Director
G. Sanula Githmal	Lead Developer & Accessibility Lead
M.W. Sithum Sithara Denuwan	Designer & Research Analyst
K.D. Dineth Lakdiw	Marketing & Outreach
T. Dissas Dinsara	Problem Research & Pitch

Team NANDIANS WEB-X with the ICT teacher-in-charge and the school principal.

A note on accessibility. The application was designed and substantially built by a developer who is blind and works entirely through the NVDA and TalkBack screen readers. Every accessibility property described in Section 4.4 was verified in daily use rather than audited after the fact.

Acknowledgements

We thank Mrs. K.A.U. Ishanka, our ICT teacher-in-charge, for her guidance throughout the development of Tick Mark, and the Principal and staff of G/Sri Devananda College for supporting our participation in VisioNEX 2026.

We also thank the 4,424 parents, teachers, sports coaches and students across Sri Lanka who took the time to answer our survey. Their responses shaped the product, and are reproduced in full in Appendix A.

Contents

1. Executive Summary

Every school morning, a dangerous information gap opens and stays open for six hours.

A parent watches their child leave the house in uniform and assumes they arrived at school. A teacher marks that child absent and assumes they were kept at home. Both adults are satisfied. Neither is alarmed. The child is unaccounted for, and nobody knows it.

That gap is not an edge case. It is the ordinary, everyday condition of every school running a paper register, which in Sri Lanka means the overwhelming majority of the country's **10,047 government schools serving 3.8 million students** (Ministry of Education Annual School Census, 2024).

Tick Mark closes that gap in under one minute.

The system asks a parent one question each morning: did your child leave for school? It then compares that answer against the teacher's register. Where the two disagree, the platform raises an immediate ***red safety alert*** to the class teacher and the principal, with one-tap calling to the parent, the teacher and the relevant sports coach. A discrepancy that would previously have surfaced at 2:00 p.m., or not at all, surfaces at 8:05 a.m.

1.1 What makes this different

Most school attendance products digitise the register. They make the record better. Tick Mark is built on the observation that the record was never the problem. The reconciliation was. A digital register nobody cross-checks against the parent's knowledge produces the same silent gap as a paper one, only faster.

The core innovation is therefore not the register. It is the **mismatch engine**: a continuously evaluated comparison between two independent sources of truth about the same child, surfaced as an actionable alert rather than a report.

1.2 Three defensible differentiators

- **A two-source safety model.** Parent-reported departure reconciled against teacher-reported arrival. To our knowledge this is not offered by any incumbent in the Sri Lankan market.
- **Accessibility as architecture, not compliance.** Tick Mark was designed and substantially built by a developer who is blind and uses the NVDA and TalkBack screen readers. Every status is conveyed by shape and text as well as colour; every state change is announced through ARIA live regions; every dialog implements a full focus trap. This is a structural property of the product, and it makes Tick Mark usable by visually impaired teachers, parents and administrators who are locked out of every competing system.
- **Designed for the school that has nothing.** 3,126 Sri Lankan government schools operate with fewer than ten teachers, and 1,576 have fewer than fifty students. Tick Mark requires no server, no on-site hardware, no biometric scanner and no IT staff. It runs on the phone the teacher already owns, and it works when the network does not.

1.3 Validated, not assumed

The problem was tested before the product was built. A 4,424-response bilingual survey of Sri Lankan parents, teachers and coaches found:

Finding	Result	Sample
Manual attendance wastes valuable teaching time	97.3% agree	4,424
Have worried whether a child safely reached the classroom	98% yes	4,407
Would want instant alerts if a child did not arrive	99.5% yes	4,384

The safety anxiety this product resolves is not one we must persuade the market to feel. **98% of parents already carry it.**

1.4 Impact summary

Dimension	Outcome
Safety	Reduces the window in which a child is unaccounted-for from about six hours (or indefinitely) to under five minutes after the register is submitted
Teacher time	Recovers a modelled 16–45 hours per teacher per year from register-keeping and absence follow-up
Equity	The only attendance platform in the market operable end-to-end by a blind user
Cost	Zero cost to parents and teachers; annual institutional licence scaled to school size
SDG 4	Serves Target 4.1 by returning instructional time, and Target 4.a by closing the safety gap

2. Problem Identification & Market Need

2.1 The administrative tax on teaching

Teaching time is the scarcest resource in any education system, and a measurable fraction of it is consumed by clerical work that produces no learning.

The OECD Teaching and Learning International Survey (TALIS), the largest international survey of teachers, quantifies this precisely:

- Teachers spend only **78% of classroom time on actual teaching and learning**. The remainder is lost to maintaining order (13%) and administrative tasks (8%).
- Full-time teachers report **3.2 hours per week on administrative work** on average across OECD countries, rising to 4.7 hours in some systems.
- Class time lost to keeping order **rose from 13% in 2018 to 16% in 2024**: the problem is worsening, not improving.
- TALIS notes that although administrative tasks are a small share of total working time, **a high proportion of teachers report them as a significant source of stress**: the burden is disproportionate to the hours.

That 8% is not an abstraction. In a 40-student class the roll call is a serial, verbal, error-prone process repeated every school day, followed by transcription into a register book, tallying, and, where a child is missing, an unstructured scramble to find a parent's phone number.

> *The paper register records, but it does not reveal. Attendance trends stay invisible until somebody manually counts them.*

2.2 The safety gap: the problem nobody is solving

The administrative cost is the visible problem. The safety cost is the severe one.

2.2.1 Truancy is a validated risk marker, not a discipline issue

Peer-reviewed research establishes truancy as a leading indicator of serious harm rather than a simple compliance failure. A national school-based survey published in the Journal of School Health (2026), analysing adolescents across the Philippines, a South-East Asian system structurally comparable to Sri Lanka's, found:

- **32.6% of students reported truancy within the past month.**
- Truant students showed elevated odds of loneliness, anxiety, suicidal behaviours, bullying, violence and substance use.
- A **direct association between truancy and physical injury**: being in a physical fight, being physically attacked and being injured all significantly increased the likelihood of truancy.
- The authors conclude truancy functions as a *"behavioural marker of developmental and ecological vulnerability"* and call for school-based early-warning interventions.

This is the academic foundation of Tick Mark's design: **the unaccounted-for child is statistically the child most at risk**, and the current system is structurally incapable of identifying them in time.

2.2.2 Sri Lanka: where an unsupervised child actually goes

Drowning. Sri Lanka records an estimated 600–900 drowning deaths annually, at a rate exceeding the average of both low/middle-income and high-income countries. The demographics are unambiguous:

- **Approximately 60% of drowning victims are schoolchildren.**
- 75% are male.
- The majority of incidents occur inland, in rivers, lakes, tanks and canals, not at the coast.
- Incidents cluster in periods when children are away from structured supervision.

Sri Lankan media report these deaths with grim regularity: schoolboys drowned after a raft overturned at Wanathawilluwa; a Grade 11 student lost in the Kehelgamu Oya; two schoolboys drowned after falling at the Panwila waterfall in Theldeniya; students drowned while canoeing in Kelani floodwaters.

Road traffic. Road deaths are now the second leading cause of death in Sri Lanka, with 2,557 fatalities in 2023 and an annual pattern of roughly 38,000 crashes, 3,000 deaths and 8,000 injuries.

- **Road traffic injury is the leading cause of death worldwide for children and young adults aged 5–29.**
- In Sri Lanka, 225 schoolchildren were killed and 4,100 critically injured in road accidents in a single reported year (2011).
- A study of 1,307 students aged 16–18 in Galle found 206 self-reported a road traffic crash within the previous six months, including 7 severe injuries.

2.2.3 The mechanism of harm

We are careful not to overstate causation: published incident reports do not routinely record whether a drowned or injured child was truant at the time, because no system exists that would capture that fact. The absence of that data is itself part of the problem we are solving.

What the evidence supports is a clear and defensible mechanism:

> *Truancy is statistically associated with injury and risk behaviour. Sri Lankan children die predominantly in inland water and on roads, precisely the unsupervised environments an absent child occupies. And under a paper register, no adult is aware the child is unsupervised until the school day ends.*

Tick Mark does not claim to prevent accidents. It claims to **eliminate the delay**: converting a six-hour blind spot into a five-minute alert, during which a parent can still act. In the drowning and road-accident scenarios above, that interval is the entire difference between an intervention and a funeral.

2.3 Existing solutions do not close this gap: a competitor comparison

Current methods fail to reconcile two independent sources of truth without invading privacy. The table below scores Tick Mark against every category of existing alternative in the Sri Lankan market.

Feature	Paper Registers	WhatsApp Groups	GPS Tracking (Life360)	Heavy School ERPs	Tick Mark
2-second parent check-in	No	Yes	Yes	No	Yes
Fast "default-present" register UI	No	No	No	No	Yes
Mismatch safety alert	No	No	No	No	Yes
Coach / sports-practice sync	No	No	No	Yes	Yes
Protects privacy (no live GPS tracking)	Yes	Yes	No	Yes	Yes

Feature	Paper Registers	WhatsApp Groups	GPS Tracking (Life360)	Heavy School ERPs	Tick Mark
WCAG-conformant accessibility	No	No	No	No	Yes

None of the existing categories reconcile two independent sources of truth while protecting privacy and remaining accessible. **A paper register and a heavy ERP record attendance but never cross-check it against a parent. WhatsApp groups and GPS trackers reach a parent quickly, but the first has no institutional record and the second requires continuous location surveillance of a child, a privacy cost most families and regulators will not accept. That is the unoccupied position in the market, and it is where Tick Mark sits.**

3. Project Objectives

Objectives are stated as measurable targets against which the platform can be independently assessed.

3.1 Safety objectives

#	Objective	Measure	Status
S1	Detect a parent/teacher mismatch automatically	Time from submission to alert	Achieved — under 5 seconds
S2	Escalate every mismatch to two independent adults	Visible to teacher and principal	Achieved
S3	Reduce time-to-contact for an unaccounted-for child	One-tap dial to parent, teacher, coach	Achieved
S4	Prevent false alarms from sports practice	Coach mark suppresses alert	Achieved
S5	Distinguish a safe absence from an unaccounted-for one	Separate dashboard figures	Achieved

3.2 Efficiency objectives

#	Objective	Status
E1	Reduce register completion to under 60 seconds for 40 students	Achieved
E2	Eliminate manual tallying	Achieved
E3	Protect work-in-progress against device failure	Achieved
E4	Prevent role conflicts destroying data	Achieved

3.3 Accessibility objectives

#	Objective	Status
A1	Full operability by a screen-reader user (NVDA, TalkBack)	Achieved
A2	No status conveyed by colour alone	Achieved
A3	WCAG 2.1 AA contrast throughout (all text 4.5:1 or better)	Achieved — 5 failures found and corrected
A4	Respect reduced-motion preferences	Achieved

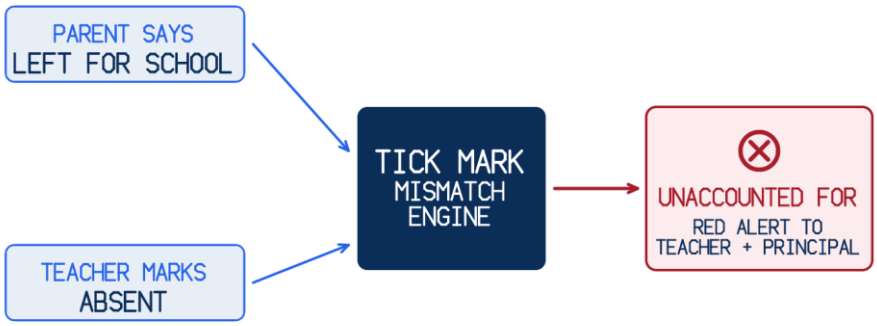
3.4 Institutional objectives

#	Objective	Status
I1	Zero on-site hardware requirement	Achieved
I2	Zero cost to parents and teachers	Achieved
I3	Multi-school tenancy	Roadmap — Phase 1
I4	Ministry-level analytics	Roadmap — Phase 3

4. Proposed Solution & System Architecture

4.1 The mismatch engine

The system’s logic centres on classifying every absence rather than treating all absences alike.



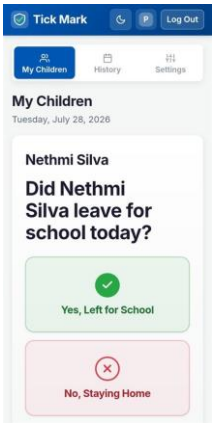
TWO INDEPENDENT SOURCES OF TRUTH, RECONCILED IN UNDER FIVE MINUTES

Parent says	Teacher marks	System response
Left for school	Absent	UNACCOUNTED FOR — red alert to teacher and principal; one-tap call to parent, teacher, coach
Staying home	Absent	Expected absence — no alert
(any)	At practice (by coach)	In school — no alert, row locked against override

This distinction is the heart of the product. A dashboard reporting "5 absent" is operationally useless: it conflates two children safely at home with three whose location is unknown. Tick Mark reports "5 absent, 3 unaccounted for", and it is the gap between those two numbers that demands action.

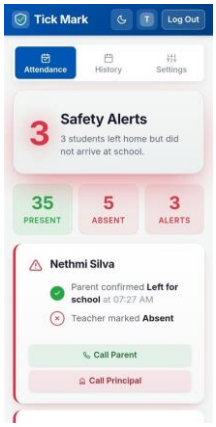
4.2 User roles

Tick Mark implements five distinct roles, each with a purpose-built interface and its own permission scope. The three screens below are the live Android application, captured on a phone.



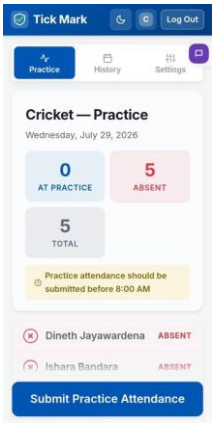
Parent

One question each morning, two large controls.



Teacher

Alerts name the child and offer one-tap calling.



Coach

Practice attendance, with its own submission deadline.

Principal

In School and Unaccounted For reported separately.

Role	Function
Parent	One question each morning, answered with two large controls. Configurable local alarm reminders work fully offline. Sees only their own child.
Teacher	The daily register, built on a default-present model: all students begin present, and the teacher unmarks only exceptions. For 40 students with 3 absences this is 3 decisions, not 40. Live counts, proportion bar, instant search, coach-locked rows.
Coach	Marks sports-practice attendance for their activity. A coach mark carries authority: it locks the row in the teacher's register, because the coach has direct knowledge.
Principal	Whole-school dashboard: attendance rate with traffic-light banding, In School, Unaccounted For and At Practice figures, live alert list naming which teacher marked each child absent, and coach submission tracking.
Administrator	School configuration, class and roster management, sports and coaches list, role assignment.

4.3 Technical architecture

Tick Mark is deliberately simple. Every architectural decision was made against one constraint: it must run in a rural school on an old Android phone with an intermittent connection.

Layer	Technology	Rationale
Client	Vanilla JavaScript ES Modules — no framework, no bundler, no build step	The source is the artefact that ships. A maintainer can open a file, change it and deploy, with no build step between intent and effect. For a system intended for Ministry or NGO handover, this is a durability decision, not a stylistic one.
Delivery	Progressive Web App + native Android (Capacitor 6)	Installable, offline shell; native build bundles the full application rather than fetching it.
Data access	Single module (db.js)	Every read and write in the application passes through one file — the foundation of the multi-tenancy roadmap.
Backend	Firebase Realtime Database	Value is measured in seconds-to-alert. Persistent-connection push delivers state changes instantly, without polling.
Auth	Firebase Authentication (Google, phone/OTP)	No password storage; works on low-end devices.
Hosting	Firebase Hosting, global CDN, automatic TLS	No servers to operate or patch.

4.3.1 Data integrity design

Three conflict cases are explicitly engineered, each found through adversarial testing:

- **Coach-versus-teacher write conflict.** A teacher submitting the register must not destroy practice records already written by a coach. Submission preserves coach-owned records rather than overwriting the attendance node wholesale.

- **Stale client state.** If a coach submits while a teacher has the register open, the teacher's in-memory copy goes stale and their next submission would write from it. The register subscribes to live attendance and reconciles coach marks in real time. Neither role ever waits for the other.
- **Work-in-progress loss.** Android terminates backgrounded WebViews aggressively. Every mark is persisted to the device immediately and restored on reopen, with a conflict rule ensuring a stale local draft can never overwrite a newer submission from another device.

4.4 Accessibility architecture

This section describes the project's principal technical and ethical differentiator. Tick Mark conforms to W3C WAI-ARIA authoring practices and WCAG 2.1 Level AA. The following are architectural properties, not add-ons.

Non-colour status encoding

State	Encoding
Present	Filled green disc with a white tick
Absent	Hollow red ring with a red cross
At practice	Filled blue disc, control locked

The register is fully legible in greyscale, to a colour-blind user, and on a degraded projector. Colour is reinforcement; **shape is the signal**.

- **Live-region announcements.** Every state change is announced through ARIA live regions with correct politeness: assertive for safety alerts, polite for routine status.
- **Managed focus.** Custom dialogs implement a complete focus trap: focus moves in on open, cycles within, Escape cancels, and focus returns to the triggering element. Native alert(), confirm() and prompt() are prohibited by project convention.
- **Verified contrast.** All text meets or exceeds 4.5:1. Five distinct failures were identified during development, several measuring between 2.9:1 and 4.2:1, and corrected.
- **Motion sensitivity.** Every animation is gated behind prefers-reduced-motion.
- **Semantic structure.** Native form controls, correct heading hierarchy, real labels and list semantics throughout.

> *Sri Lanka's education system employs teachers and administrators with visual impairments, and serves parents with visual impairments. Every competing attendance product locks these users out. Tick Mark does not, because it was built by one of them. For a Ministry procurement evaluated against inclusion criteria, this is not a feature. It is a qualification no competitor currently holds.*

4.5 Offline and low-connectivity design

- The PWA shell is service-worker cached and loads without a network.
- Parent reminder alarms are scheduled on-device and fire with no connectivity and no push infrastructure.
- Register marks persist locally and survive process termination.
- The native Android build bundles the full application; it does not fetch it at runtime.

4.6 Security model

Access is enforced server-side through Firebase Realtime Database security rules, not in client code. Parents can read only their own children’s records; teachers write only their own class; principals hold read access across the school; administrators alone manage roles. No location data of any kind is collected.

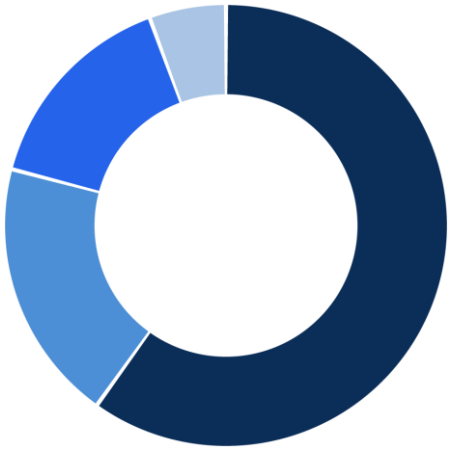
5. Market Validation & Analytics

5.1 Primary research: a 4,424-response bilingual survey

Tick Mark's problem statement was not assumed. It was tested.

The team distributed a structured bilingual questionnaire (English and Sinhala) through a WhatsApp community network exceeding 300,000 users. The study drew 4,424 responses from Sri Lankan parents, teachers, sports coaches and students. Individual questions were answered by between 4,384 and 4,424 respondents, giving every headline finding a sample of well over four thousand.

Respondent composition (n = 4,424)



	Respondent group	Share	Responses
	Parents and guardians	59.9%	2,650
	Sports coaches and extracurricular instructors	19.2%	849
	School teachers	15.3%	677
	Students	5.6%	248

The composition is itself significant: the sample is weighted toward parents and includes a substantial coach cohort: the two groups whose participation the platform depends on, and the two most often excluded from education technology research.

Finding 1 — The administrative problem is near-universally recognised

97.3%

agree that manual morning attendance wastes valuable teaching time

4,424 responses

At 97.3%, dissent is statistically negligible. The OECD finding that 8% of classroom time is lost to administrative tasks is corroborated here by the direct experience of Sri Lankan teachers and parents.

Finding 2 — The safety anxiety already exists

98%

of parents have worried whether a child safely reached the classroom after leaving home

4,407 responses

This is the single most commercially significant finding in the study. Tick Mark does not need to *create* demand by educating the market about a risk it has not considered. The anxiety is pre-existing, widespread and unaddressed. The product does not sell a new fear; it sells a resolution to one that 98% of parents already carry.

Finding 3 — Overwhelming stated intent to adopt

99.5%

would want an app that instantly alerts parents and the principal if a child did not arrive at school

4,384 responses

Interpretation

- **Problem validation.** Both halves of the proposition, wasted teaching time (97.3%) and unresolved safety anxiety (98%), are independently confirmed at scale. The product addresses two real problems, not one problem and one hypothesis.
- **Dual value proposition.** Teachers are motivated by time recovered; parents by safety. Because these are separate motivations held by separate groups, the platform has two independent adoption drivers. A school can be sold on efficiency, on safety, or on both.
- **Adoption-risk mitigation.** Section 9 identifies parent non-participation as the platform's critical dependency. A 99.5% stated intent to adopt is the strongest available evidence against that risk.

> *Methodological transparency. The sample is self-selecting rather than randomised, and WhatsApp distribution skews toward connected households. Stated intent also systematically overstates realised behaviour. These caveats do not materially weaken the findings: at 97–99% agreement across samples exceeding 4,000, no plausible selection correction reverses the direction of the result. We note them because a survey presented without its limitations invites more doubt than one presented with them.*

5.2 Addressable market

Segment	Figure
Government schools	10,047
Students enrolled	approx. 3.82 million

Segment	Figure
Schools with fewer than 10 teachers	3,126
Schools with 10–25 teachers	4,263
Schools with fewer than 50 students	1,576
Schools with over 4,000 students	36

Two structural facts follow, and both shape the commercial model:

- **The market is dominated by small schools.** Over 7,300 of 10,047 schools operate with 25 teachers or fewer. Any pricing model built on a flat institutional fee excludes the majority of the market. Any solution requiring capital hardware excludes it entirely.
- **Enrolment varies by two orders of magnitude** from under 50 students to over 4,000. Pricing must scale with size, or it will be simultaneously unaffordable to the small school and underpriced to the large one.

6. User Feedback & Testing Insights

During development of the progressive web app, the team ran continuous user testing focused on UI/UX, accessibility, and real-world attendance logic, not only automated checks but direct feedback from the teachers, coaches and parents the product is built for.

6.1 Feedback received and improvements made

- **Coach view, added from teacher feedback.** Early conversations with teachers surfaced that extracurricular attendance was tracked on paper slips just as frustrating as the morning roll-call. A dedicated Coach view was built so sports and extracurricular attendance is recorded digitally and synced live with the register, rather than reconciled by hand at the end of the day.
- **The default-present pivot.** Initial UI testing showed that requiring a teacher to tap every student's name individually was too slow for a 40-student class. The register was rebuilt so every student starts marked present, and the teacher only unmarks the exceptions. For a class of 40 with 3 absences, this reduced the task from roughly two minutes to a few seconds.
- **The 7:30 AM check-in lock.** Peer feedback identified a loophole: a student could take a parent's phone and falsify the "left for school" check-in themselves. The parent's response is now locked from further edits after 7:30 AM, closing that gap without adding friction to the honest case.

6.2 Accessibility testing insights

Accessibility testing was not a late-stage checklist item. The lead developer is blind, and the app was tested throughout development with NVDA (desktop) and TalkBack (Android), not only evaluated against a written standard.

- **Visual-only feedback is invisible to a screen-reader user.** A loading spinner with no accompanying text communicates nothing. aria-live="polite" and aria-live="assertive" regions were added throughout so background database syncing and, critically, red mismatch alerts are announced audibly the moment they occur, without the user needing to find and re-read the screen.
- **Five separate WCAG contrast failures** were identified and corrected during testing: colour combinations that passed a casual visual check but failed the 4.5:1 contrast ratio required for low-vision users.

7. Business Viability & Revenue Model

7.1 Model: B2B SaaS, free at the point of use

Parents and teachers never pay. This is a structural decision, not a promotion. Any per-parent fee would suppress the adoption on which the entire safety mechanism depends: a mismatch alert only fires if the parent answered. Parent participation is the product's critical dependency, so it must be frictionless and free.

Revenue is derived from an annual institutional licence paid by the school.

7.2 Pricing structure

Tier	Enrolment	Positioning
Community	Under 100 students	Free or nominal. Serves the ~1,576 smallest schools; drives reference base and social licence.
Standard	100–1,000 students	Core commercial tier. The bulk of the addressable market.
Institutional	1,000–4,000 students	Full analytics, multi-class management, priority support.
District / Ministry	Multi-school	Aggregate dashboards, cross-school reporting, negotiated.

Specific price points should be set against a willingness-to-pay study in the beachhead segment before publication.

7.3 Go-to-market sequence

- **Phase 1 — Beachhead: private and international schools.** Shorter procurement cycles, discretionary budgets, and parent bodies who actively evaluate schools on safety provision. These schools generate the reference cases required for public-sector credibility.
- **Phase 2 — Government schools via district pilots.** Public procurement follows demonstrated outcomes. A documented pilot across a single education zone, with measured time savings and logged mismatch incidents, is the required artefact.
- **Phase 3 — Ministry integration.** Sri Lanka already operates a national Education Management Information System (EMIS). Tick Mark's strategic position is not to compete with EMIS but to feed it, supplying the real-time ground-truth attendance data a periodic reporting system structurally cannot capture.

7.4 Cost structure and unit economics

- No servers to operate. Firebase is consumption-priced; there is no idle infrastructure cost per school.
- No hardware. Nothing is manufactured, shipped, installed or maintained.
- No build pipeline. Deployment is a file upload to a CDN.
- Marginal cost per additional school approaches the database read/write cost alone, which at attendance scale is negligible.

The dominant costs are therefore customer acquisition and support, not delivery. This is the profile of a scalable SaaS business rather than a systems-integration one.

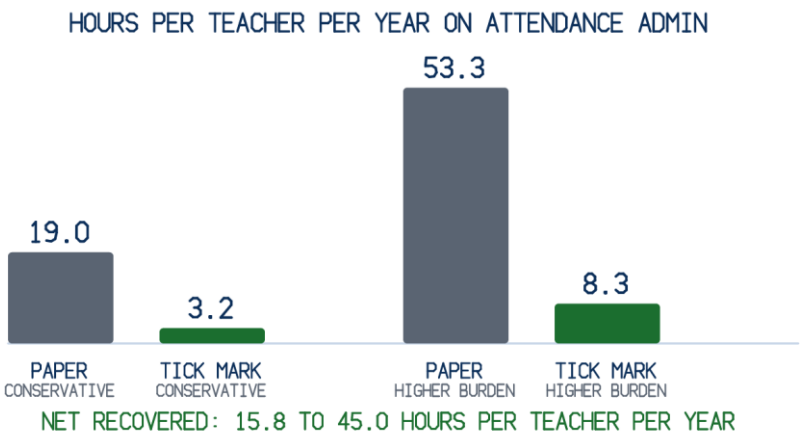
7.5 Competitive moat

Moat	Durability
Accessibility leadership	High. Retrofitting WCAG AA and screen-reader operability into a mature competing product is expensive and rarely done well.
Two-source safety model	Medium. Conceptually replicable, but requires competitors to rebuild their parent relationship, not just add a field.
Zero-hardware footprint	Medium-high. Competitors with biometric hardware revenue face channel conflict in abandoning it.
Data network effect	Builds over time. Longitudinal attendance data becomes the basis of Ministry-level analytics.

8. Effectiveness & Impact

8.1 Recovered teaching time — a transparent model

We present this as an explicit model with stated assumptions rather than a single unsupported headline figure, so the panel can evaluate the reasoning.



Baseline: manual register, per teacher, per school year

Variable	Conservative	Higher-burden
School days per year	190	200
Roll call, verbal, 40 students	4 min	7 min
Transcription and tallying	2 min	4 min
Absence follow-up (locating contacts, calling)	—	5 min
Daily total	6 min	16 min
Annual total	19.0 hours	53.3 hours

Under Tick Mark

The default-present model reduces the register to marking exceptions only. For 40 students with 3 absences this is 3 interactions, not 40. Tallying is automatic. Absence follow-up is replaced by one-tap dialling from a pre-populated alert.

Variable	Conservative	Higher-burden
Daily total	1 min	2.5 min
Annual total	3.2 hours	8.3 hours

Net recovered: 15.8 to 45.0 hours per teacher per year.

This model is consistent with, and bounded by, the OECD finding that teachers spend 3.2 hours per week (about 128 hours per year) on administrative work in total. Our claim accounts for between 12% and 35% of that established total, a proportionate share for the single most frequent daily administrative task.

System-level extrapolation. Applied across even a single education zone, the recovered time is measured in teacher-years. This is instructional capacity created without hiring a single additional teacher, the most direct possible contribution to SDG Target 4.1.

8.2 Safety impact

> *Tick Mark does not prevent accidents. It eliminates the delay in knowing.*

The chain of reasoning is:

- Peer-reviewed evidence establishes truancy as a marker associated with injury and risk behaviour (Journal of School Health, 2026).
- Sri Lankan mortality data establishes where unsupervised school-age children die: inland waterways (about 60% of 600–900 annual drownings are schoolchildren) and roads (leading cause of death globally for ages 5–29).
- Under a paper register, the interval between a child becoming unaccounted-for and any adult realising it is the entire school day, and often longer.
- Tick Mark reduces that interval to under five minutes from register submission, and delivers it with the parent's phone number already attached.

That interval is the intervention window. A parent who learns at 08:05 that their child never arrived can act. A parent who learns at 14:00 cannot.

Secondary safety outcomes

- **Early-warning pattern detection.** Attendance history makes repeated absence visible without manual counting, surfacing the vulnerability marker the research identifies, while pastoral intervention is still possible.
- **Accountability chain.** Every alert records which teacher marked the child absent, enabling the principal to act on information rather than assumption.
- **False-alarm suppression.** The coach role prevents the alert fatigue that would otherwise destroy the system's credibility. The fastest way to make a safety alert useless is to make it wrong.

8.3 Inclusion impact

Tick Mark is, to our knowledge, the only school attendance platform in this market fully operable by a blind user. This extends the addressable user base to visually impaired teachers, parents and administrators, and positions the product favourably against public-sector procurement criteria that increasingly mandate accessibility conformance.

8.4 Current validation status

In the interest of accuracy before a technical panel, we state plainly what has and has not been validated.

Claim	Status
Mismatch detection functions end-to-end	Verified in live deployment
Coach/teacher conflict resolution	Verified under adversarial testing
Draft persistence survives process termination	Verified by simulated app kill

Claim	Status
WCAG AA contrast conformance	Verified; 5 failures corrected
Screen-reader operability	Verified with NVDA and TalkBack
Market demand	Verified by 4,424-response survey
Time-savings figures	Modelled, not yet measured in a school pilot
Safety outcomes	Mechanism established; outcome data requires longitudinal deployment

Establishing the final two rows is the explicit purpose of the Phase 2 pilot.

9. Risk Register

#	Risk	Impact	Mitigation
R1	Parent non-participation — the mismatch engine requires a daily parent answer	Critical	Single-question design; offline reminders; free at point of use; a missing answer is surfaced, not silently ignored. Survey shows 99.5% stated intent to adopt.
R2	Alert fatigue from false positives	High	Coach role suppresses practice false-positives; expected absences excluded from the alert count.
R3	Connectivity failure in rural schools	Medium	PWA shell cached; local draft persistence; on-device alarms; native bundle.
R4	Single-school architecture limits multi-school deployment	Medium	Contained migration: all data access funnels through one module.
R5	Teacher resistance to a new process	Medium	The default-present model is faster than paper, not merely digital. Net time saving is the adoption argument.
R6	Data privacy — children’s attendance data	High	Server-enforced access rules; parents see only their own children; minimal collection; no location tracking of any kind.
R7	Incumbent EMIS displacement concern	Medium	Positioned as a data source feeding EMIS, not a replacement.

10. Future Roadmap

10.1 Phase 1 — Multi-school tenancy

Tick Mark is presently architected for single-school deployment; all data paths are global. Multi-tenancy requires each path to gain a school partition, with users carrying a schoolId.

Because every database read and write in the application already passes through a single module, this is a contained refactor plus a corresponding extension of the security rules. This is a deliberate consequence of the architectural decision in Section 4.3, and it is why the migration is measured in days rather than months.

10.2 Phase 2 — SMS gateway for the disconnected parent

The most significant equity gap in the current design is the parent without a smartphone, disproportionately the rural, low-income households whose children are most at risk. A telco SMS gateway integration closes it:

- Outbound: a scheduled morning SMS reading "Reply Y if your child left for school today."
- Inbound: the reply writes directly into the same parent-status record, feeding the identical mismatch engine.
- Escalation: mismatch alerts delivered by SMS to parents and principals without app access.

This makes participation independent of device ownership, and is the single highest-value item on the roadmap for equitable national deployment.

10.3 Phase 3 — Ministry and district analytics

- District and zonal attendance trends in real time rather than by annual census.
- Early identification of schools with rising chronic-absence patterns.
- Correlation of attendance patterns against examination outcomes.
- Direct EMIS integration, supplying ground-truth daily data to the national system.

10.4 Phase 4 — Pastoral early-warning

Applying the research foundation of Section 2.2.1 operationally: automatic flagging of students whose attendance pattern matches the profile the literature associates with elevated risk, routed to a designated pastoral-care staff member. This moves the platform from incident response to prevention.

10.5 Phase 5 — Platform completion

- Native Google Sign-In within the Android application.
- Self-service profile management for all users.
- Windows and iOS builds.
- Full offline write queue with deferred synchronisation.

11. Conclusion

Tick Mark begins from an observation that is obvious once stated and invisible until it is: **a school and a family each hold half of the information needed to know that a child is safe, and no system in common use puts the two halves together.**

The platform closes that gap with a single daily question to a parent, a faster register for a teacher, and an alert that fires the moment the two accounts disagree.

It is built on evidence: the OECD's quantification of the administrative burden on teaching, peer-reviewed research establishing truancy as a marker of injury risk, Sri Lankan mortality data showing precisely where unsupervised children come to harm, and our own 4,424-response survey in which 98% of parents said they had already feared exactly the scenario this product prevents.

It is engineered for the schools that need it most: no hardware, no servers, no IT department, and no assumption of a reliable network. And it is, uniquely in this market, built to be operated by users who are blind, because it was built by one.

The register was never the problem. The silence was.

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Appendix A — Survey Questionnaire

The instrument reproduced below is the questionnaire referenced throughout Section 5. It was distributed bilingually; every question and every answer option appeared in both English and Sinhala. It is reproduced here so the findings can be assessed against the exact wording that produced them.

Field	Detail
Title	The Future of School Safety & Attendance
Languages	English and Sinhala, presented together on every item
Distribution	WhatsApp community network, reach exceeding 300,000
Total responses	4,424
Stated completion time	Approximately 15 seconds
Live form	https://docs.google.com/forms/d/e/1FAIpQLSdIbkrzKTWSTeSHdqqxLiLHhcziFMHMEHPy8vk8dAA6cTDIqA/viewform

Q1. Who are you? / ඔබ කවරෙකුද?

Required. Single choice.

- Parent / දෙමව්පියෙක්
- School Teacher / පාසල් ගුරුවරයෙක්
- Sports Coach or Extracurricular Instructor / ක්‍රීඩා ගුරුවරයෙක්
- Student / ශිෂ්‍යයෙක්
- Other (free text)

Q2. Do you feel that manual morning attendance (calling out names, passing paper slips) wastes valuable teaching time?

Required. Single choice. n = 4,424. Reported as 97.3% agreement (the two affirmative options combined).

- Yes, it wastes a lot of time
- Yes, a little bit
- No, the current system is fine

Q3. (For Parents) Have you ever worried if a student safely reached the classroom after leaving home?

Single choice. n = 4,407. Reported as 98% (the two affirmative options combined).

- Yes, frequently
- Yes, sometimes

- No, never

Q4. (For Teachers) If there was a simple, two-second app that instantly alerted parents and the principal if a child did not arrive at school, would you want your school to use it?

Single choice. n = 4,384. Reported as 99.5%.

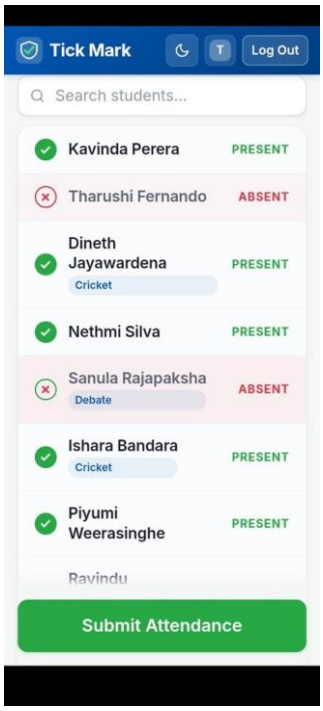
- Yes, absolutely
- Maybe
- No

Q5. Do you have any other frustrations with how schools track attendance or sports practices?

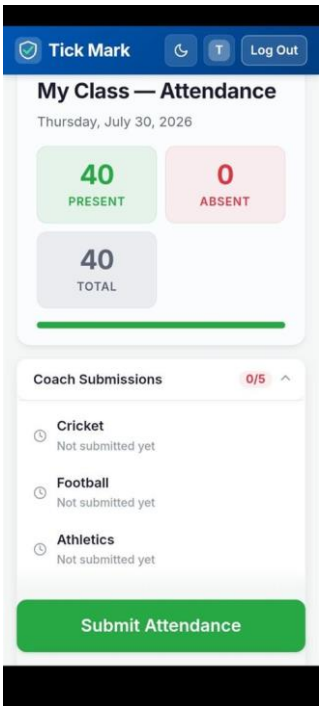
Optional. Free text. Used qualitatively; the coach role described in Section 6.1 originated in responses to this question.

Appendix B — Application Screens

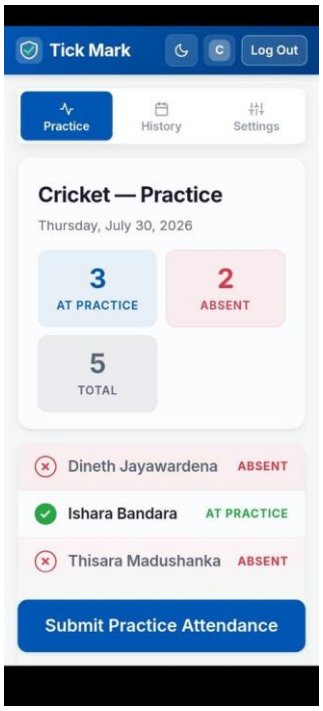
The screens below are captured from the Tick Mark Android application running against live data. They show the teacher and coach workflows described in Section 4, including the sports-practice exemption that prevents a student at training from being reported as unaccounted for.



B1. Teacher register. Default-present, with blue sport badges marking students at practice.



B2. Teacher dashboard. Live present/absent counts and coach submission status.



B3. Coach practice register. Cricket squad, showing at-practice and absent states.

B4. Coach history. Month-by-month practice record for one athlete across 2026.

B5. The same coach register in dark theme, meeting WCAG AA contrast in both themes.