

PROPOSAL

Weighbridge Management Platform

Accurate weighing. Theft detection. Unattended lanes. Every station on the web.

Every load weighed right, recorded once, seen everywhere.

KILOSАHIHI · WEIGHBRIDGE MANAGEMENT PLATFORM

PRESENTED BY

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A weighbridge is where money changes hands: every tonne bought, sold, produced or transported crosses it. **KiloSahihi** makes that weight accurate, tamper-resistant and visible — on the ticket, in the browser and in your ERP — from a single station to a network of unattended lanes.

This proposal is for any organisation that operates a weighbridge: quarries and cement plants, mines, factories, agricultural processors, container yards, scrap dealers, logistics companies and public weighbridges. It explains how the basic weighing works, and then how KiloSahihi protects the figure from error and theft, removes the operator from the lane where you want to, and puts every station on the web.

WHY KILOSAHIHI IS EXCEPTIONAL

Built for East and Central African weighbridges

- **Reads your indicator correctly.** Native support for the SMA protocol of Avery Weigh-Tronix and more than ten other indicator formats, with stability judged by software, not guessed.
- **Catches theft, not just typos.** Opt-in audit rules, camera evidence on every ticket, and a log of every vehicle the camera saw — including those that were never weighed.
- **Works when the internet does not.** The station is the system of record; the cloud, the ERP and other stations receive a copy when the link is up.
- **One platform from manned to unattended.** Add cameras, RFID, position sensors and interlocks lane by lane. Records, tickets and reports never change.
- **Pay only for what you use.** A single commercial weighbridge runs on the core station alone. Cameras, cloud, automation and ERP are separate modules you add when they earn their keep, never a bundle you are forced to buy.
- **Supported here.** Designed, built and supported in the region, for the vehicles, indicators, printers and internet conditions found here.

Start small, add only what you need

KiloSahihi is licensed as a core station plus optional modules. Each module is a separate decision with its own price; none is a prerequisite for another except where noted. You can start with one lane and one licence and grow from there.

Module	What it gives you	Who typically needs it
Core station	Everything in the basic weighing operation: indicator link, two-pass weighing, all three modes, tickets, reports, users, audit trail, backups, offline operation.	Every customer. A single commercial weighbridge needs nothing else.
Cloud and linked stations	Web dashboard, multi-site view, scheduled e-mail reports, remote support, stations sharing open weighings.	Owners who are not at the bridge; groups with more than one station.
Cameras	ANPR plate reading, overview photo on the ticket, arrival alerts, the vehicles-seen reconciliation log.	Sites with disputes, theft concerns or high traffic.
Unattended lane	RFID / fingerprint, position sensors, boom and light interlocks, driver terminal. Requires cameras.	Plants and mines that want the operator off the lane or 24-hour operation.
ERP connector	Automatic posting of every weighing, master data pull, durable outbox.	Companies running Odoo, Sage, ERPNext, SAP, Dynamics or an in-house system.

Example. A small commercial weighbridge that charges the public per weighing buys the core station and a printer, and nothing more. If it later wants the owner to see the day's takings from a phone, it adds the cloud module. Cameras and boom barriers are never required to run the bridge.

KILOSAHIHI AT A GLANCE

What you get

Weighing	Two-pass gross / tare / net; standard, multi-deck and per-axle modes; stored tares; several products on one vehicle
Accuracy	SMA (Avery Weigh-Tronix), ZM, LP, Yaohua, Keli, D2008, generic ASCII and Modbus over serial, TCP, UDP or Bluetooth; sealed indicators read as-is
Theft detection	Opt-in audit rules, flagged manual weights, two-pass lock, void authority, full audit trail
Production variance	Weighed quantity against document quantity and expected yield, per product, per line, per shift
Cameras	ANPR plate reading and overview photo of the actual load on every weighing
Unattended lanes	RFID / fingerprint driver identification, position sensors, boom and light interlocks, driver terminal
Reconciliation	Every vehicle the camera saw, matched against every weighing made — on the web
Linked stations	Weigh in at one station, weigh out at another; one record, one ticket, one report

Web access	Live dashboard, multi-site view, scheduled reports, remote access from any browser or phone
ERP	Odoo, Sage X3, ERPNext / Frappe and REST webhook connectors with a durable outbox
Tickets	A4 / A5 PDF, dot-matrix and thermal; your logo and document names; original / duplicate marking
Continuity	Offline-first, automatic backups, machine-bound licence, role-based users

FOUNDATION

The basic weighing operation

Everything else in this proposal builds on one simple, reliable loop. This is what an operator does at a manned KiloSahihi station, and what the system does behind it.

Step	At the weighbridge	In KiloSahihi
1 • Arrival	The vehicle stops on the deck. The operator types the registration — or the ANPR camera reads it.	A known vehicle is recognised and its last transaction recalled: trailer, driver, customer or supplier, product. The operator confirms instead of re-typing.
2 • First weight	The operator captures the weight when the indicator is stable.	The reading is taken live from the indicator. Capture is locked until the weight is stable and valid; the value cannot be typed over unless manual entry is licensed and it is then flagged.
3 • First ticket	A first-weight ticket prints; the vehicle leaves to load or unload.	An open weighing is created. It appears as pending on the dashboard until the vehicle returns.
4 • Second weight	The vehicle returns. The operator selects the pending weighing (or the camera does) and captures again.	Gross and tare resolve automatically; the net is computed. Document number, product and price are confirmed.
5 • Final ticket	The completed ticket prints with gross, tare, net, photos and signatures.	One record, one ticket number. The transaction is posted to the cloud, to other stations and to the ERP.

Weighing modes

- **Standard** — a single gross reading from a one-platform bridge. The everyday mode for quarries, factories and farms.
- **Multi-deck** — indicators that report each deck and the gross separately. Deck weights are stored, printed and checked against axle-group limits.
- **Per-axle** — sequential weighing of each axle on a short platform. Every axle weight is stored and ruled against the vehicle class.
- **Stored tares** for fleet vehicles where a single pass is enough, with the tare age shown on the ticket.
- **Several products on one vehicle**, each on its own line with its own weight and, where wanted, its own price.

Tickets and reports

- Tickets on **A4 / A5, dot-matrix or thermal** printers with your logo, document names, original / duplicate marking and multi-copy printing. Direct print at completion, no dialogs.

- **Reports** by date, product, supplier, customer, vehicle, transporter and direction; Excel and PDF; daily, weekly and monthly reports delivered by e-mail on a schedule.
- **Roles** for operator, supervisor and administrator. Voids and edits need authority and are logged with the user.

ACCURACY

The right figure from the indicator, every time

Most weighbridge errors are not in the load cells; they are in how the software reads the indicator. KiloSahihi treats the indicator link as a measurement, not a text feed.

- **SMA protocol (Avery Weigh-Tronix).** Full support for the Scale Manufacturers Association protocol used by ZM series and other Weigh-Tronix indicators. Stability is judged by the software — a reading is accepted only when consecutive replies agree — so digital load cells that flicker on one division no longer block capture, and a moving vehicle never gets a ticket.
- **Division check.** The scale's division (d) is configured per bridge; a reading that is not a whole multiple of d is rejected, for every protocol.
- **Capacity limits.** Readings under the minimum ($20 \times d$) or over the maximum capacity are captured with a warning and a confirmation, never silently.
- **Sealed indicators read as-is.** Where the indicator is legally sealed, KiloSahihi uses its native format and never re-interprets the figure.
- **Evidence for the technician.** One tap on the weight display shows the last raw lines from the indicator and how each was judged — diagnosis in minutes, not site visits.
- **Calibration and statutory verification reminders** per weighbridge, with the certificate date on file.

SMA / ZM (Avery Weigh-Tronix) · LP series · Yaohua XK3190 · Keli · D2008 · Generic ASCII · Modbus · Serial · TCP · UDP · Bluetooth

INTEGRITY

Theft detection and production variance

A weighbridge loses money in three ways: weights that are wrong, weights that are altered, and vehicles that never get weighed. KiloSahihi addresses all three.

Audit rules you switch on

- **Tare deviation** — a known vehicle whose tare differs from its history by more than your tolerance.
- **Net deviation** — a load far from the usual net for that vehicle, product or route.
- **Same-day repeats** and **time between weighings** — a truck that returns too quickly to have unloaded.
- **After-hours activity** — weighings outside the shift pattern you define.
- **Operator void rate** — an operator who voids or edits more than peers.
- **Image / plate mismatch** — the registration typed does not match what the camera read.
- Every rule ships **off**. An administrator enables each one deliberately, tunes its tolerance and sees flags on the dashboard and in the ticket log — so legitimate site patterns are never punished by default.

Manual weights under control

Manual weight entry can be **disabled by licence** for a company that wants none. Where it is allowed, every manual figure is flagged on the ticket, in reports and in the audit log, and the raw indicator lines around it are kept.

Variance in the production line

For a plant, the weighbridge is the first and last measurement in the process. KiloSahihi reports **weighed quantity against document quantity** on every receipt and dispatch, and **input against output per product, per line and per shift**, so a shortfall between raw material in and finished product out shows up as a number on a report — not as a surprise at stock-take. Per-vehicle and per-supplier variance trends identify where the loss is happening.

RECONCILIATION

Vehicles that were never weighed

The most common leak at a manned weighbridge is not a wrong figure — it is a vehicle waved through without a weighing being started. No ticket, no record, no trace.

- The **ANPR camera logs every plate that crosses the deck**, whether or not a weighing was started, with a timestamp and a photo.
- That log is **synchronised to the web** alongside the weighings.
- The reconciliation report lists **vehicles seen but not weighed**, vehicles weighed in but not out, and document quantity against weighed quantity — by station, day and operator.
- Management reviews this from any browser, without asking the station for anything.

The camera does not depend on the operator. It runs on its own link, reconnects on its own, and its log cannot be edited from the weighbridge PC.

EVIDENCE

Cameras: proof of what was weighed

Two cameras do two different jobs. Together they turn the weighbridge from a data-entry point into an evidence point.

Camera	What it does	What you gain
ANPR (plate recognition)	Reads the registration as the vehicle stops on the deck. The vehicle's history is on screen before the operator touches the keyboard; an arrival alert sounds and flashes if they are away.	No mistyped or swapped registrations. A plate image on every weighing. Faster turnaround. The reconciliation log above.
Overview (material capture)	Photographs the whole vehicle on the deck at the first and second weight, with live view on the operator screen.	Proof of the real material and its level — full or half, sheeted or open, trailer present, nobody on the deck. Most disputes end at the photo.

[ANPR camera](#) · [Overview camera \(Dahua / Axis\)](#) · [PoE switch](#) · [Photos on A4 ticket and in the cloud](#)

AUTOMATION

Unattended stations, interlocks and lane control

With cameras in place, the only tasks left at the bridge are confirming who the driver is and which document the load belongs to. KiloSahihi hands those to the driver and lets hardware enforce the rules.

Step	At the lane	In KiloSahihi
1	Vehicle drives onto the deck. Position sensors confirm all axles are on the platform; the entry boom closes behind it.	ANPR reads the plate and loads the vehicle's history. Capture stays locked until the sensors and the indicator agree.
2	Driver presents an RFID card or fingerprint at the terminal.	Driver and transporter identified; access rights checked.
3	Driver confirms product and document number on the screen, pre-filled from the ERP where available.	Weight captured once stable; overload check against gross and axle limits.
4	Ticket prints at the terminal; green light; exit boom opens.	Record completed with photo and plate image; posted to the cloud and the ERP.
Exception	Driver presses the intercom; the boom stays closed.	A supervisor resolves it from the control room or remotely, camera view in front of them.

Interlocks that cannot be skipped

- **Bridge clearance.** The next weight cannot be captured until the deck has returned to zero and the position sensors show the previous vehicle has left. Two vehicles cannot share a ticket.
- **All axles on.** No capture while any axle sits off the platform.
- **Stable and valid.** No capture while the indicator is in motion or the reading fails the division check.
- **Boom holds until complete.** An overloaded or unfinished vehicle stays on the deck until the weighing is resolved.
- **Fail safe to red.** Light and boom default to closed on any power or network loss.

Lane terminal with printer · RFID / fingerprint · Position sensors / loops · Entry and exit booms · Traffic light · PLC / Modbus I/O · Intercom

Same software, same records. A ticket from an unattended lane is identical in the database, the reports, the cloud and the ERP to one taken by an operator. Run a lane manned by day and unattended at night without changing the system.

CONNECTED

Linked stations and web-based access

- **Linked stations.** Weigh in at the gate, weigh out at the plant; weigh at the mine, re-weigh at the port. Stations share the open weighings so the second weight completes the same record and the same ticket number, wherever it happens.
- **Live dashboard** from any browser or phone: vehicles on site, today's tonnage by product and direction, pending weighings, station and camera status.
- **Multi-site.** Several weighbridges or several plants in one view, with per-station drill-down and per-station reports.
- **Reports from anywhere,** scheduled to management by e-mail — no VPN, no remote desktop.

- **Offline-first by design.** The station is the system of record on its own database; the cloud receives a copy when the link is up. A cloud or internet outage never stops a weighing.
- **Remote support.** Indicator diagnostics, ticket layout and settings can be handled remotely, cutting site visits.

WIDE INDUSTRY

One platform, every industry

KiloSahihi ships as one product with industry profiles. The profile sets the fields, the labels, the ticket and the reports; the weighing underneath is the same.

Industry	What the profile adds
Quarry and aggregates	Fast capture by plate and product, per-product pricing, several products on one truck, cash and account customers, busy-site direct print.
Manufacturing and cement	Receiving and dispatch against purchase and sales orders, document quantity against weighed quantity, ERP posting.
Mining	Multi-deck and axle compliance, linked stations from pit to port, remote sites with intermittent internet.
Agriculture and produce	Grower, factory and outturn fields; pre-recorded tares; crate and bag counts; coffee, tea, avocado, potato and grain flows.
Logistics and container yards	Container number (ISO 6346), size, seal, shipping line and booking; verified gross mass (VGM) on the ticket.
Scrap metal	Weight card and container numbers, per-material lines and prices, supplier history.
Public weighbridge	Overload pre-check: vehicle classes, per-axle and gross limits, compliance-forward tickets, per-vehicle rates.
Waste and municipal	Vehicle and route reporting, per-customer tonnage, SCADA and plant integration.
Air cargo	Air waybill capture with chargeable weight (greater of actual and volumetric) and special handling codes.

INTEGRATION

Straight into your ERP

- **Every completed weighing is posted automatically** — vehicle, supplier or customer, product, document number, gross, tare and net — so goods-received notes and delivery confirmations carry the weighed quantity, not a re-typed one.
- **Durable outbox.** Tickets queue locally and are delivered with retries when the ERP or the network is down. Nothing is dropped and nothing is posted twice.
- **Master data both ways.** Suppliers, customers, products and open orders can be pulled from the ERP so the weighbridge validates against them.
- **Any ERP.** Connectors for Odoo, Sage X3 and ERPNext / Frappe ship in the box; SAP, Dynamics and in-house systems connect through the REST webhook or a purpose-built connector on the same framework.

Odoo · Sage X3 · ERPNext / Frappe · REST webhook · Custom connector

How KiloSahihi delivers

Step	What happens
Site survey	Indicator model and connection, network and power at the bridge, lane layout, camera positions, ERP and reporting requirements. We issue the PC and network specification.
Install and train	Indicator connection, master data, ticket layout, users and backups; operators and supervisors trained on the live system.
Cloud and ERP	Dashboard and linked stations enabled; ERP connector configured and tested with your ERP team.
Cameras and automation	Camera, sensor and lane-control specification issued; installation supervised; interlocks commissioned and tested with a loaded vehicle.
Ongoing support	Software updates, remote support and agreed response times, direct from the KiloSahihi team.

NEXT STEP

See it on your own weighbridge

A short site visit is enough to confirm the indicator, the lane layout and the reporting you need, and to show KiloSahihi running on your own bridge with your products and your ticket. From there we agree where to start.

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