Requirements

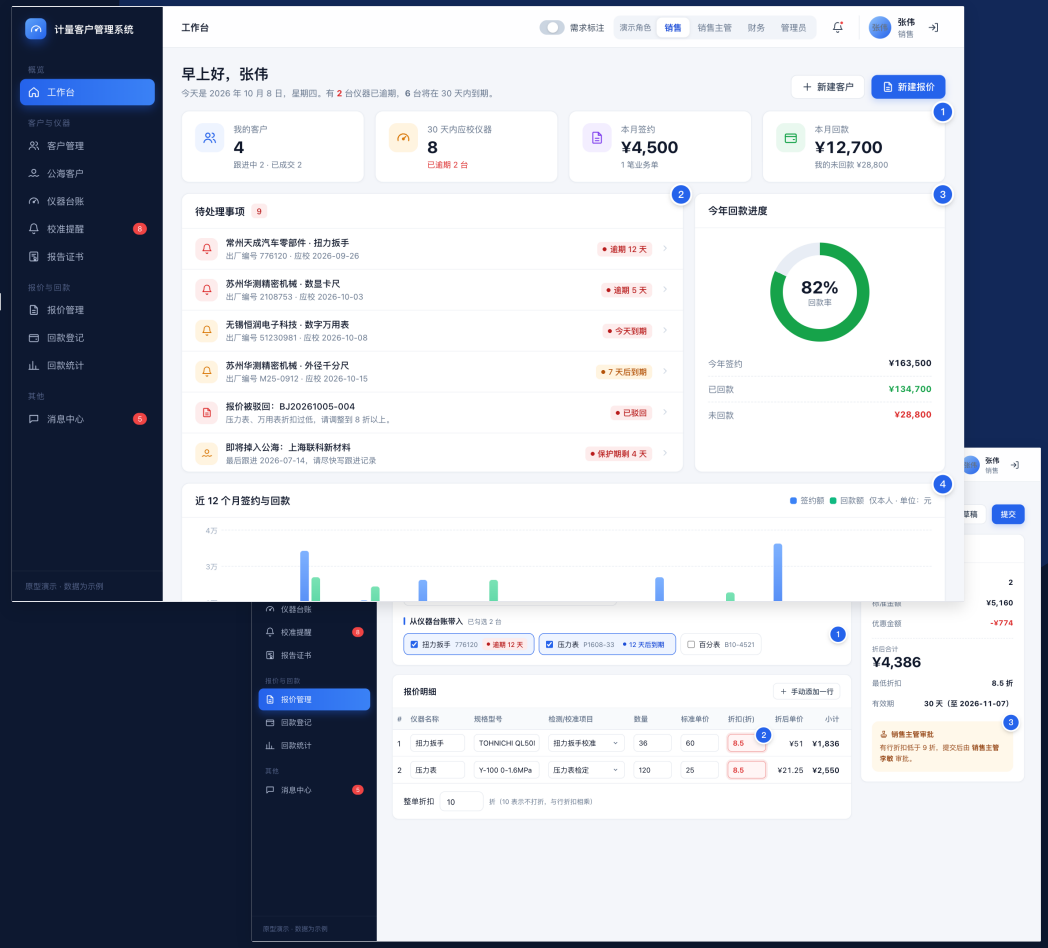
Metrology Customer CRM

No colliding accounts · Instruments stay on calibration

Quotes with approval · Collections you can track

Collision prevention · Instrument ledger · Calibration reminders · Quote & discount mgmt · Collection stats · Report certificates

Web · Internal use · Oct 2026



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Delivery scope
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Instrument ledger
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Quotes & discounts
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Ordered by business flow

01

Requirements

Product positioning · Delivery scope · Roles & permissions

Product positioning

Internal web system for metrology / calibration companies: manage customers, instruments, quotes, and collections on the sales side — stop colleagues from claiming the same account, and remind follow-up when instruments are due for calibration.

Core needs (item 6 is new)

1 Collision prevention

Dedup on create
Cannot recreate a customer already followed by a colleague

2 Instrument ledger

Register in-use instruments per customer
Cycle and next due date

3 Calibration reminders

Near due date
In-app remind the owner sales

4 Quote & discount mgmt

Create quotes
Tiered approval for over-limit discounts

5 Collection stats

Record collections after deal
By sales, customer, month

6 Report certificates

Upload report archives
Extract 4 fields, rename & export

How the business flow connects

Create customer	Register instruments	Due reminder	Quote approval	Deal & collect	Log calibration
Dedup check Block or appeal	Compute next due date	Remind sales to contact customer for re-test	Auto-pass in limit Escalate if over	Create receivable Finance records payment	Due date rolls forward Next cycle

Customers with no follow-up enter the public pool; other sales claim them and run the same flow.Users: ~10 sales, sales manager, finance, admin — desktop browser.

Delivery scope

This phase covers five core items plus the new report-certificate module, and the supporting capabilities that make them usable

Need	What we build
Collision prevention	Dedup on create; cannot recreate a colleague’ s customer; managers can reassign ownership
Instrument ledger	Register in-use instruments per customer with cycle and next due date
Auto calibration reminders	Near due date, in-app remind the owner sales
Quote & discount mgmt	Create quotes; over-limit discounts go to approval
Collection stats	Record collections after deal; see paid/unpaid by sales, customer, month
Report certificates (new)	Upload PDF/Word archives; extract 4 fields; rename by selected fields and download as a zip

This phase focuses on sales-side management, not a lab management system. Report certificates only read issued reports — no drafting or editing. Out-of-scope items on the right can be a separate project if needed.

Supporting capabilities included

- Accounts & permissions
- Contacts & follow-ups
- Price list
- In-app messages

Follow-up records drive “days since last contact,” which underpins collision-protection periods.

Out of scope

- Lab job dispatch
- Certificate drafting & seals
- Standard-equipment traceability
- Customer self-service portal
- Invoicing & finance-software integration
- Mobile app

Roles & permissions

Role	Visible data	Main actions
Sales	Own customers, instruments, quotes, collections; own uploaded reports	Create customers, log follow-ups, register instruments, quote, view own collections, upload & export reports
Sales manager	Whole team; all reports	Handle collision appeals, reassign customers, approve over-limit discounts, see team collections, upload & export reports
Finance	All closed quotes and collections	Record payments, reconcile receivables; cannot change ownership
Admin	All	Accounts, roles, price list, discount rights, reminder rules, pool rules

Data isolation: Sales cannot see each other’ s customer phones, instruments, or quotes;on collision, only show “already followed” plus the owner’ s name.

Accounts: The boss uses a sales-manager account (no separate role); lab staff do not log in this phase.

02

Feature breakdown

Collision prevention · Pool & follow-up · Instrument ledger · Calibration reminders · Quotes & discounts
Collections entry & stats · Workbench & settings · Report certificates (new)

Feature overview

#	Feature	Main content	Roles
F1	Login & permissions	Account/password login & change password; admin creates accounts and deactivates leavers; menus by role	All
F2	Customer profiles	Customer info, multiple contacts; list search/filter; Excel import of historical customers	Sales、Manager
F3	Collision prevention	Block on credit code / name / mobile match;similar-name hints;collision appeal； merge duplicates	Sales、Manager
F4	Pool & follow-up	Follow-ups; 90 days without owner follow-up → pool; claim/assign; pin “never drop”	Sales、Manager
F5	Instrument ledger	Register instruments per customer; auto due date; calibration history & cert attachments; import/export	Sales、Manager
F6	Calibration reminders	30d / 7d / due day / weekly overdue; in-app remind owner sales; mark outcome; export	Sales、Manager
F7	Quotes & discounts	Price list unit price & agreement discount;tiered approval;30 d validity;export Excel/PDF; close deal	Sales、Manager、Admin
F8	Collection entry	Deal creates business order; finance records partial payments; reject overpayment; corrections audited	Finance（SalesRO）
F9	Collection stats	Overview; by sales/customer/month; unpaid aging — all exportable	All (by permission)
F10	Workbench & messages	Role-based todos and KPIs; in-app messages	All
F11	Settings	Accounts/roles, price list, discount rights, reminder rules, pool rules, dictionaries	Admin
F12	Report certificates	Upload PDF/Word archives； extract 4 fields (cert. no. etc.)； rename with 2–4 fields and download zip	Sales、Manager、Admin

Collision prevention（F3）

On create or import, the system deduplicates first; occupied matches cannot be saved

Match field	Action
Same Unified Social Credit Code	**Same customer — hard block**
Normalized names match (trim spaces, full→half width, ignore suffixes like “Co., Ltd.”)	**Same customer — hard block**
Contact mobile already used by another customer	**Same customer — hard block**
Names contain each other or are highly similar but not identical	**Warn “possible duplicate”; can still save after confirm; manager may merge later**

Collision blocked

- Create fails
- Hint “followed by X” or “in the pool”
- Do not show their phone, instruments, quotes, or collections
- May submit a collision appeal for manager reassignment or reject

Possible duplicate

- List similar-name customers and owners
- After confirming different companies, save proceeds
- Manager can merge duplicates into the kept record

Can save

- Owned by the creator
- Enters 90-day protection
- Others cannot claim during protection

Pool & follow-up （F4)

Protection period counts from the owner’ s last follow-up

Protection period for one customer (days)



Follow-up records

- Channel: call, visit, WeChat, other
- Notes, next contact time
- Only the current owner can write; managers cannot renew for them
- Shown newest-first on customer detail

Pool rules

- 90 days without owner follow-up → auto pool
- Anyone may claim pool customers; protection resets
- Former owner cannot reclaim within 7 days of drop
- Customers of departing owners also go to the pool

Manager actions

- Pin “never drop” (key accounts)
- Manual reassignment requires a reason
- Directly assign pool customers
- All of the above are logged

Instrument ledger（F5）

Customer instruments under test / in use — not company standards; one record per instrument under the customer

Field	Description
Name, model/spec, serial number	Required; serial unique within a customer
Asset no., manufacturer, range, accuracy	Optional
Using dept, storage location	Optional
Calibration cycle	e.g. 6 / 12 / 24 months; per-instrument override
Last calibration date, certificate no.	Optional
Next due date	Last date + cycle, auto-calculated; manual override OK
Status	In use / idle / scrapped; idle & scrapped stop reminders



- From a customer, or search all in Instrument ledger by customer, name, code, due status
- Each calibration adds a history row and updates last/next dates; history is kept
- Upload cert scans (PDF/image); certificates are not drafted in-system
- Excel import/export per customer

Calibration reminders（F6）

Based on next due date; only In-use instruments are reminded



Remind owner sales prepare a quote

Remind again

Same-day reminder

Until marked handled, idle/scrap, or a new calibration is logged

Reminder nodes can be toggled in settings

Item	Rule
Who is reminded	Only the owner sales; managers see team due/overdue summaries on the workbench
Where it appears	In-app message + workbench list (customer, instrument, serial, due date, days left, owner)
Filter & export	Filter due-in-30d / overdue; export Excel for sales call lists
Outcome	Contacted / Quoted / Customer defers / Submitted； marking closes this reminder
Remind again	After logging a new calibration, reminders restart from the new due date

Reminders are in-app only — no SMS, email, or WeChat to customers.

Quotes & discounts (F7)

Approval path uses the lower of line discount × order discount; thresholds are configurable

Discount approval (default thresholds)

≥ 90%	80–90%	< 80%
Auto-approved on sales submit	Sales manager approves	Admin approves

Quote status



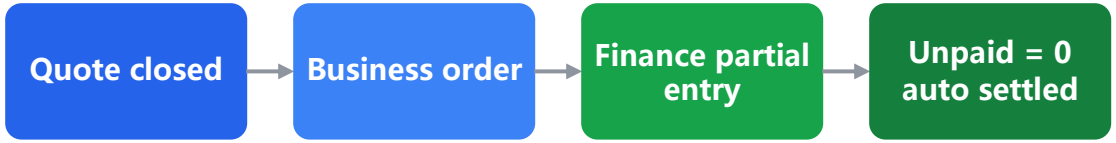
Click "Close deal" on an approved quote to create a business order for collections; void manually before closing.

Quote rules

- Pick instruments from the ledger; name/model filled
- Unit price from price list (editable); free entry if none
- Customer agreement discount is the default for new lines
- Reject requires a reason
- Approved quotes export Excel/PDF for sales to send

Collections entry & stats（F8 • F9）

Collection entry



- Order: customer, owner sales, amount due, close date, linked quote
- Each payment: date, amount, method, notes; optional payment proof
- Paid cannot exceed due; overpayment is rejected
- Finance records; sales read-only on own customers
- Corrections by the finance user or admin, with audit trail
- Contract scans as attachments; no invoicing or finance-software integration

Collection stats

Stat	Content
Overview	Signed amount, paid, unpaid, collection rate
By sales	Per person signed/paid/unpaid/rate; sortable
By customer	Per customer due/paid/unpaid
By month	Last 12 months signed vs collected
Unpaid detail	Customer, sales, due, paid, unpaid, close date, aging Aging buckets: ≤30 / 31–60 / 61–90 / 90+ days

Metrics: Signed = order receivables;collected = recorded payments.Filter by close date or payment date — the page states which.

Permissions: Sales see self; managers see team with drill-down; finance & admin see all; all results export to Excel.

Workbench, messages & settings (F1 • F10 • F11)

Workbench (first screen after login)

- Sales: my customers, due in 30d, month signed/collected; due reminders, rejected quotes, soon-to-pool customers
- Manager: team customers, pending discounts, collision appeals, team unpaid, signed ranking
- Finance: month signed/collected, unpaid total, 90+ day aging

In-app messages

- Calibration reminders
- Collision block & appeal outcomes
- Discount approval todos & results
- Pool alerts, new receivables, report recognition done
- Mark read; click to open page; no SMS this phase

Settings (admin only)

- Accounts & roles: add, reset password, deactivate
- Price list: item, category, unit price, unit
- Lowest allowed discount per role
- Calibration cycle options & reminder nodes
- Pool days, reclaim cooldown, enable/disable
- Customer grade, industry, and other dictionaries

Login & permissions (F1)	
Login	Account + password; users can change their own password
Departure	Deactivated accounts cannot log in; customers are kept and reassigned by the manager
Menu	Shown by role; sales cannot see settings or others' data

Report certificates (F12 • new)

Upload issued reports as archives; extract 4 fields; batch-rename by selected fields and download. No drafting or editing of content.

Upload archive
zip / rar / 7z, ≤ 500 MB
multi-select OK

Unpack & check
Read PDF & Word
other files skipped & listed

Extract fields
Cert. no.、Instrument
Serial no.、Asset no.

Manual review
Complete “Needs review”
& “Failed” reports

Rename & export
Pick 2–4 fields
download as one archive

How filenames are built

1 Cert. no. | 2 Instrument | 3 Serial no. | Asset no.

↓

JZ2026-10-0101_digital caliper_2108753.pdf

- Join in click order; separator: underscore, hyphen, or space
- Extension unchanged: PDF stays PDF, Word stays Word
- Illegal chars → “-”; duplicates get (2), (3)
- Omit missing selected fields; failed items must be filled first
- Export whole pack, checked items, or search across archives; choices remembered per account

Recognition status

Status	Meaning
Success	All 4 fields found
Needs review	Some fields missing, e.g. no asset no. on the cert
Failed	Unreadable text — blurry scan, encrypted or corrupt file
Reviewed	Manually confirmed or corrected against the original

Access: Sales, manager, admin; sales see only their own uploads.
Recognition: Word and text PDFs are read directly; scans use OCR. Accuracy depends on layout — please provide sample reports before development.

03

Page inventory

13 web modules · Menus by role

Page inventory

Module	Pages & dialogs
Login	Account login
Workbench	Role-based todos and KPIs
Customers	Customer list, create (live dedup), Excel import preview Detail: follow-ups / contacts / instruments / quotes / collections / log Log follow-up, reassign, merge, collision appeal
Public pool	Pool list, claim, assign
Instrument ledger	Instrument list, detail & log calibration, add/edit
Calibration alerts	Open / done, mark outcome, export
Report certificates	Upload batches / All reports, upload archive Batch detail (results + export settings), report review
Quotes	Quote list, create/edit, detail, quote preview
Approvals	Discount approval, collision appeals, history
Collection entry	Business order list/detail, record payment, corrections
Collection stats	By sales / customer / month / unpaid detail
Messages	Message list
Settings	Accounts, price list, discount rights, reminders, pool, dictionaries

Menu	Sales	Manager	Finance	Admin
Workbench	●	●	●	●
Customers	Own	●		●
Public pool	●	●		●
Instrument ledger	Own	●		●
Calibration alerts	Own	●		●
Report certificates	Own	●		●
Quotes	Own	●		●
Approvals		●		●
Collection entry	RO	RO	●	●
Collection stats	Own	●	●	●
Messages	●	●	●	●
Settings				●

"Own" = only own data (reports = own uploads). Manager approves 80–90%; below 80% goes to admin.

04

Prototype

Screenshots from the interactive HTML prototype (原型图.html) to confirm structure and flow; colors, icons, and copy follow the final UI.
Blue numbers are callouts matching the notes on the right.

Prototype • Login



1 Login

Account & password login

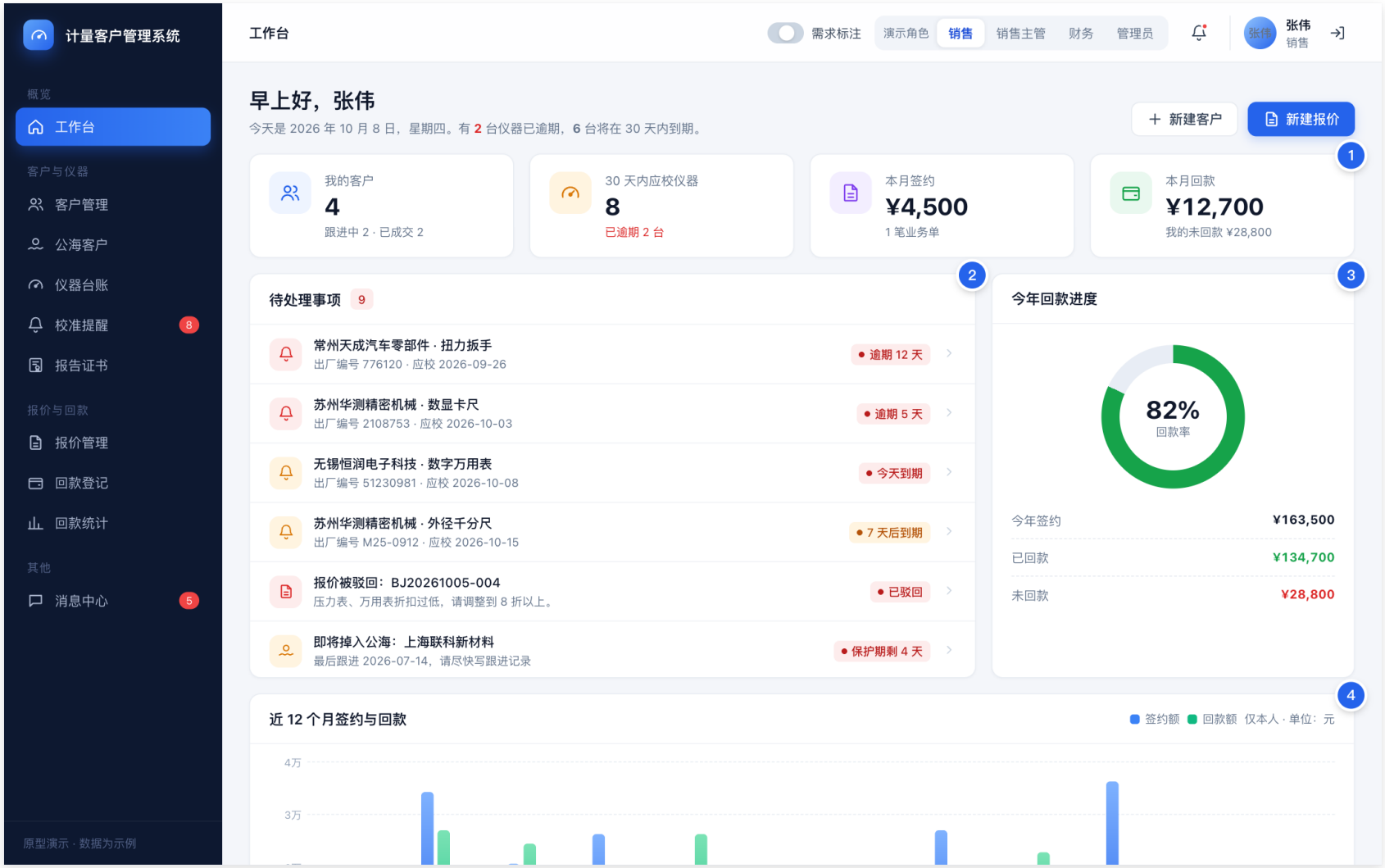
① Accounts created by admin; change password after login

② Four roles: sales, sales manager, finance, admin — menus and data by role

Deactivated leavers cannot log in; customers reassigned by the manager

Role shortcuts under the login button are demo-only; not in production

Prototype • Workbench • Sales



2 Workbench • Sales

First screen after login; own metrics only

① My customers, instruments due in 30d, month signed, month collected

② Todos:overdue / near-due instruments、rejected quotes、soon-to-pool customers、overdue unpaid

③ YTD collection progress

④ Last 12 months signed vs collected

Prototype • Workbench • Sales manager



3 Workbench • Sales manager

Team view

① My todos: discount approvals + collision appeals

② Todo list — click through to approval or instruments

③ YTD sales signed ranking

Finance workbench shows signed, collected, unpaid totals and 90+ day aging

Prototype • Customer list



4 Customer list

Sales see only their own customers

① Create and Excel import both run dedup

② Search by name, contact, mobile; filter by status; managers filter by sales

③ Pool protection days left; red within 7 days; key accounts can pin “never drop”

④ Log follow-up; managers also get “Reassign”

Prototype • Create customer • Collision blocked



5 Create customer • Collision blocked

Live dedup while typing

① Enter name, credit code, or contact mobile

② Match with a colleague’ s customer:show owner name and match basis only — not phone/instruments/quotes;may submit a collision appeal

③ Save button disabled

If in the pool, prompt to claim there

Prototype • Create customer • Possible duplicate



6 Create customer • Possible duplicate

Similar names, not identical

① List similar-name customers and owners

② After confirming different companies, save proceeds

Dedup ignores spaces, full/half width, and suffixes like “Co., Ltd.”

Managers can merge duplicates later

Prototype • Excel import customers



7 Excel import customers

Download template → upload → dedup preview → import

① Four-step import

② Blocked rows are not imported and do not overwrite existing customers

③ Possible-duplicate rows can be imported together after confirm

Your team prepares historical customers/instruments via the template

Prototype • Customer detail



8 Customer detail

Sales manager view

① Grade, status, pool protection

② Managers can merge and reassign with reason logged

③ Tabs: follow-ups, contacts, instruments, quotes, collections, activity log

④ Only the owner can log follow-ups; save resets protection to 90 days

Prototype • Public pool



9 Public pool

No follow-up for 90 days or owner departed

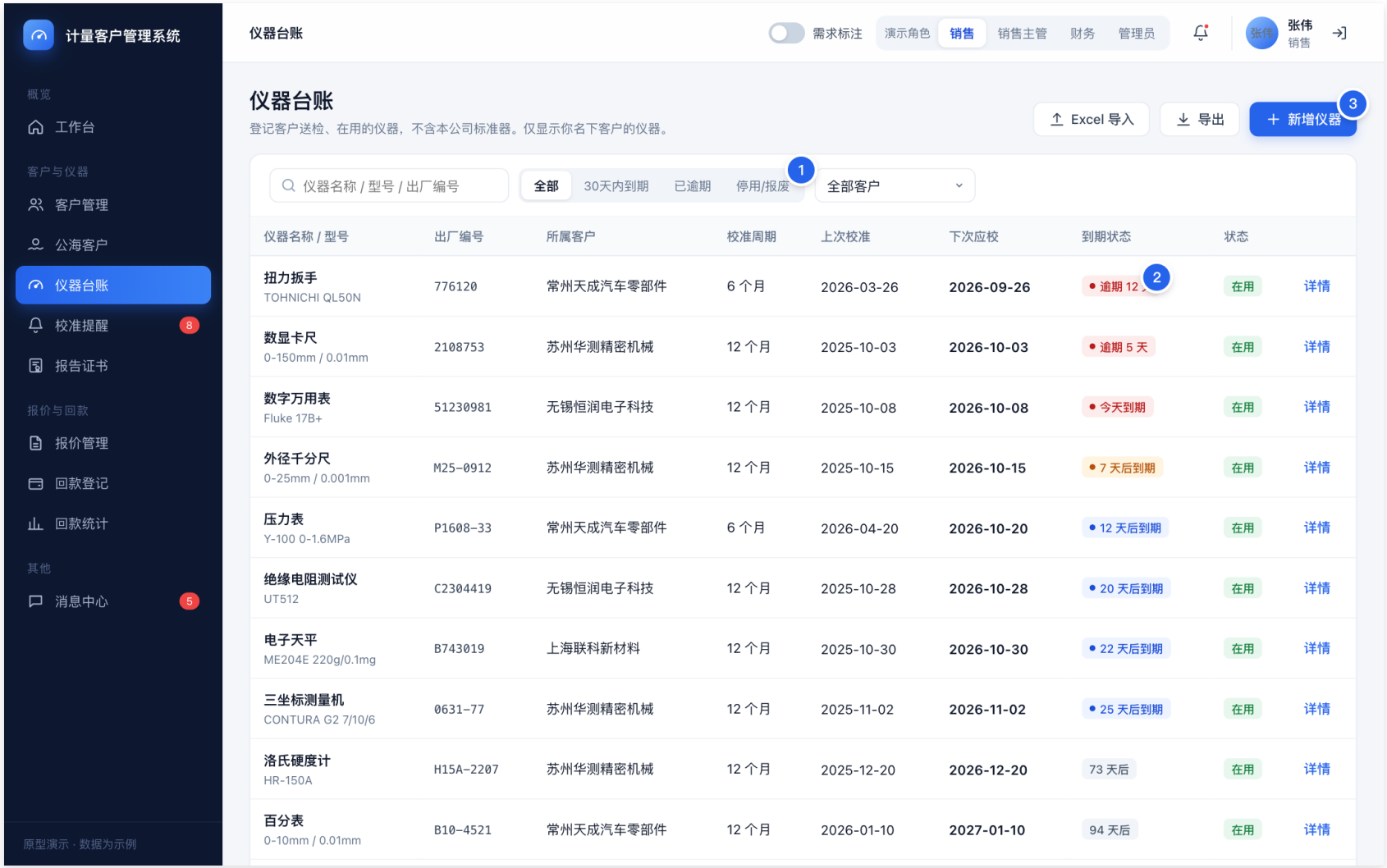
① Former owner cannot reclaim within 7 days of drop

② Other sales may claim immediately; protection resets

Managers can assign directly

Pool shows name, industry, region only — not historical quotes/collections

Prototype • Instrument ledger



10 Instrument ledger

Customer in-use instruments; excludes company standards

① Filter: all / due in 30d / overdue / idle-scrap; also by customer

② Due status: overdue red, ≤7d orange, ≤30d blue; idle/scrap not reminded

③ Excel import/export, add instrument

Serial numbers unique within a customer

Prototype • Instrument detail • Log calibration



11 Instrument detail • Log calibration

Open by clicking an instrument

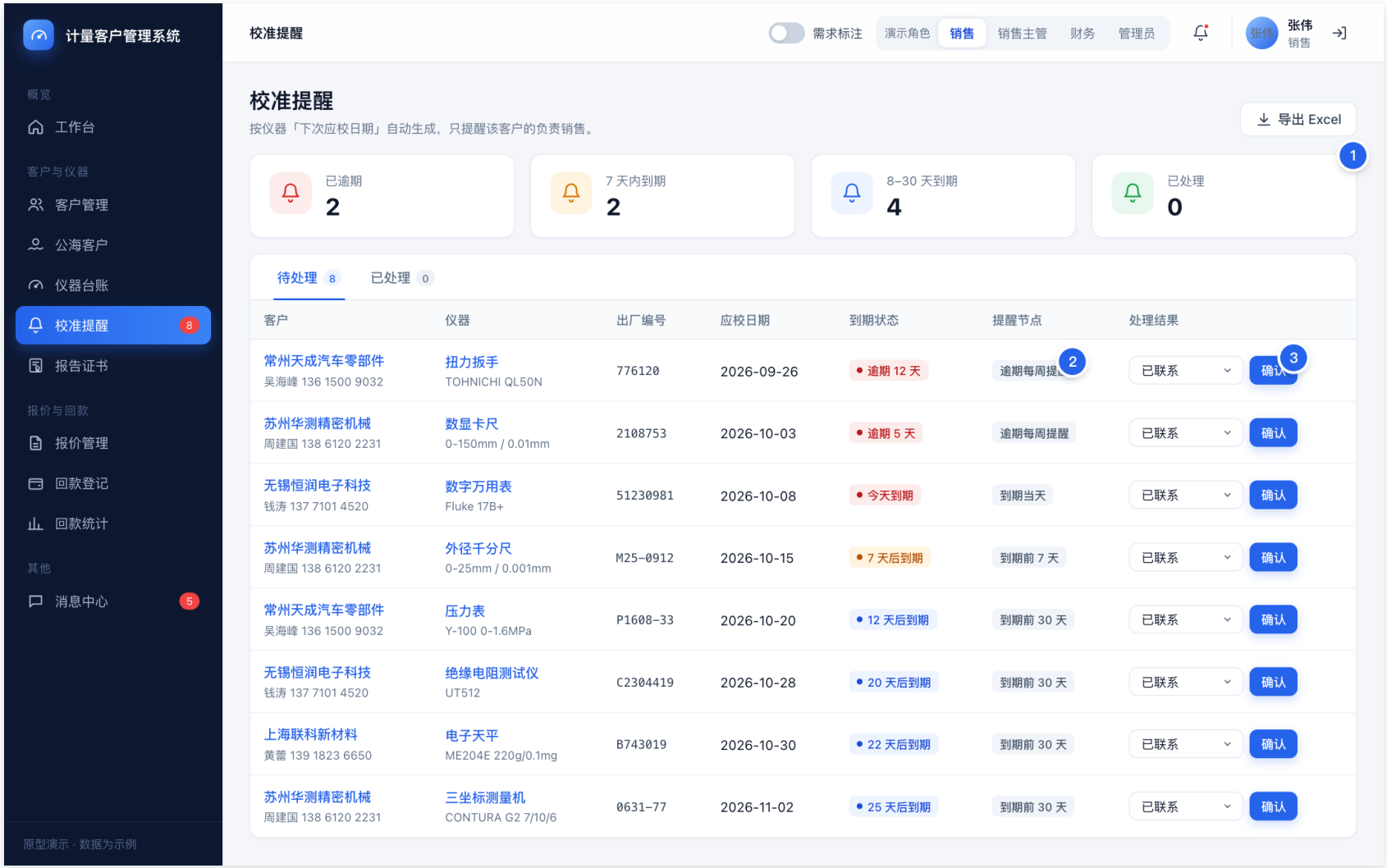
① Instrument info & cycle; next due = last + cycle (editable)

② Calibration history kept (not overwritten)

③ Log this calibration and upload cert PDF/image

After save, due date rolls forward and reminders restart; certificates are not issued in-system

Prototype • Calibration alerts



12 Calibration alerts

Auto-generated from next due date

① Counts: overdue, ≤7d, 8–30d, handled

② Nodes: 30d / 7d before, due day, weekly overdue

③ Mark outcome:Contacted / Quoted / Customer defers / Submitted

Remind owner sales only; managers see team summary; Excel export; no SMS to customers

Prototype • Reports • Upload batches



13 Reports • Upload batches

New module; sales see only their uploads

① Upload archives; multi-select OK

② Per-archive results: success / needs review / failed

③ Large archives recognize in background with progress; in-app notify when done

④ “All reports” searches across archives by any of the 4 fields and exports

Prototype • Report certificates • Upload archive



14 Report certificates • Upload archive

Check contents after unpack

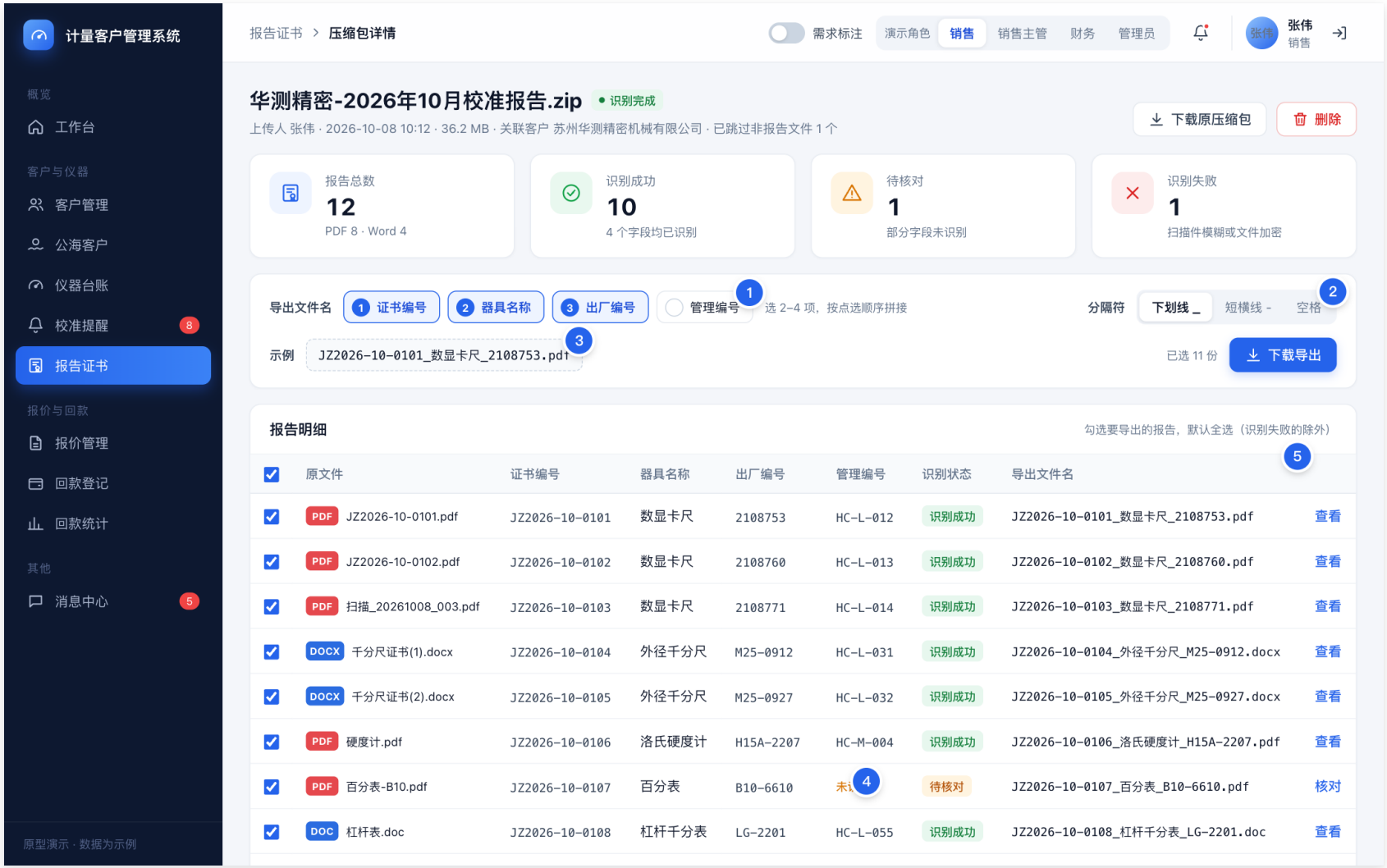
① zip / rar / 7z, ≤ 500 MB each

② Only PDF and Word; other files skipped & listed

③ Optional link to a customer for later lookup

Reports in subfolders are included; encrypted archives must be unlocked first

Prototype • Reports • Results & export



15 Reports • Results & export

All reports in one archive

① Pick 2–4 of 4 fields; join in click order for the filename

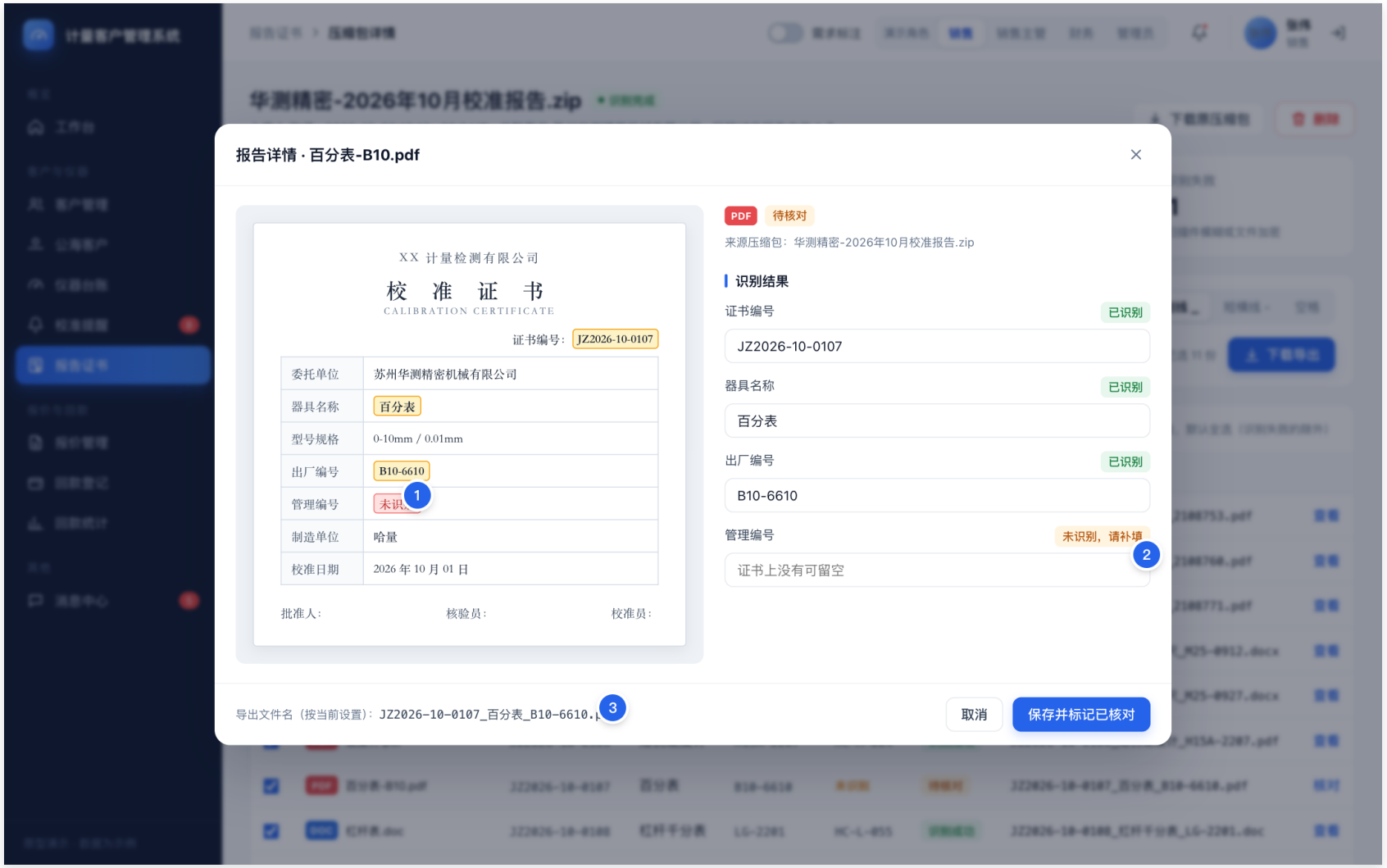
② Separator: underscore / hyphen / space

③ Filename sample; download packs into one archive

④ Missing fields highlighted yellow; status “Needs review”

⑤ Per-report export filename; extension unchanged

Prototype • Reports • Review report



16 Reports • Review report

Complete fields against the original

① Original preview — yellow = found, red = missing

② Fill or edit fields; leave blank if absent on the cert

③ Filename preview uses current export settings

Save → “Reviewed”; failed reports must be completed before export

Prototype • Quote list



17 Quote list

30-day validity; auto-expire when past

① Filter by status: Draft, Pending, Approved, Rejected, Closed, Expired

② Lowest discount color-codes the approval path (green: skip, orange: manager, red: admin)

③ Quote status

Sales see own quotes; managers and admins see all

Prototype • Create quote



18 Create quote

Pull from instrument ledger

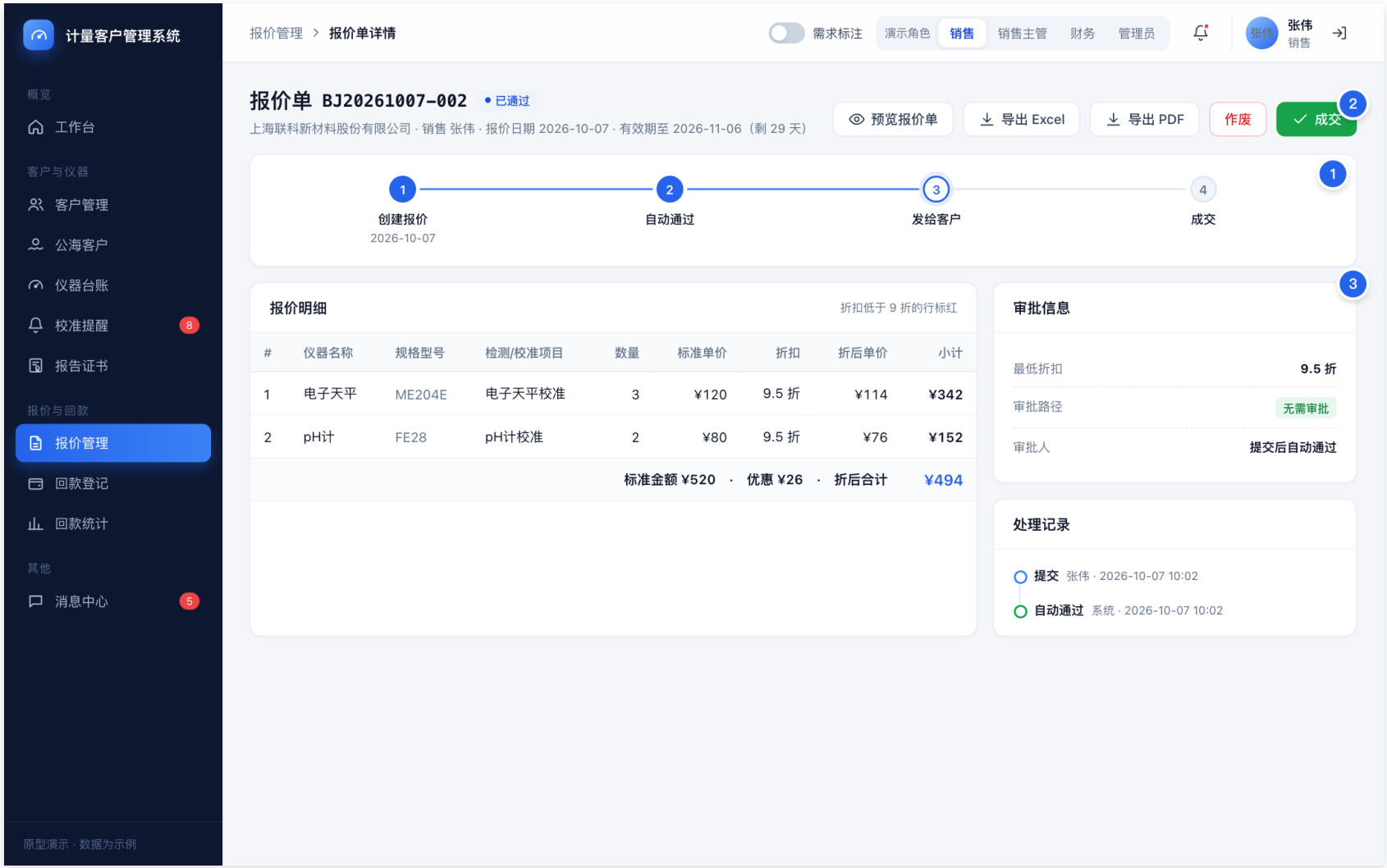
① Pick customer instruments — name, model, charge item, list price filled; agreement discount as default

② Line discount below 90% highlighted red

③ Right panel shows live amounts and approval path

Lowest discount = line × order discount; save as draft OK

Prototype • Quote detail



19 Quote detail

Approved quote

① Progress: create → approve → send to customer → close

② Export Excel/PDF, void, close deal (creates business order)

③ Lowest discount, approval path & approver; activity below

Rejected shows reason; edit and resubmit; expired can be copied as a new quote

Prototype • Quote export preview



20 Quote export preview

Export PDF / Excel

① Header, customer & sales info, lines, totals, notes, stamp area

② Sales send after export; system does not email customers

Please confirm layout; share an existing quote template if you have one

Prototype • Approvals • Discount approval



21 Approvals • Discount approval

Sales manager view

① Applicant, customer, amount, notes; lines below 90% highlighted

② Approve or reject; reject requires a reason

③ Below 80% exceeds manager authority — admin approves

Results notify sales via in-app message

Prototype • Approvals • Collision appeal



22 Approvals • Collision appeal

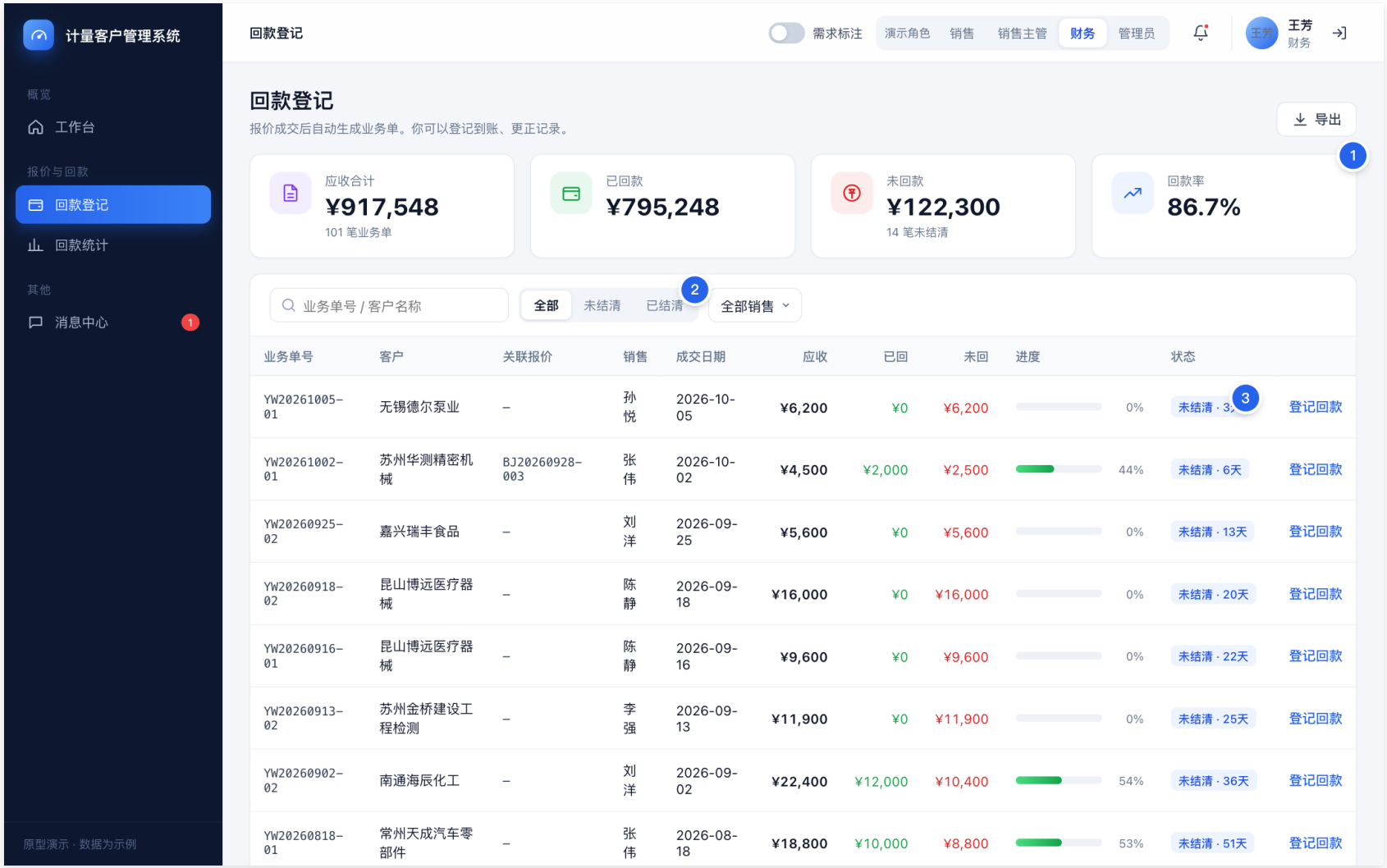
Manager decides ownership

① Appeal reason & evidence; compare with current owner’ s last follow-up

② Reassign to appellant (reason logged) or reject and keep current owner

Outcome notifies related sales

Prototype • Collections • Business orders



23 Collections • Business orders

Finance view

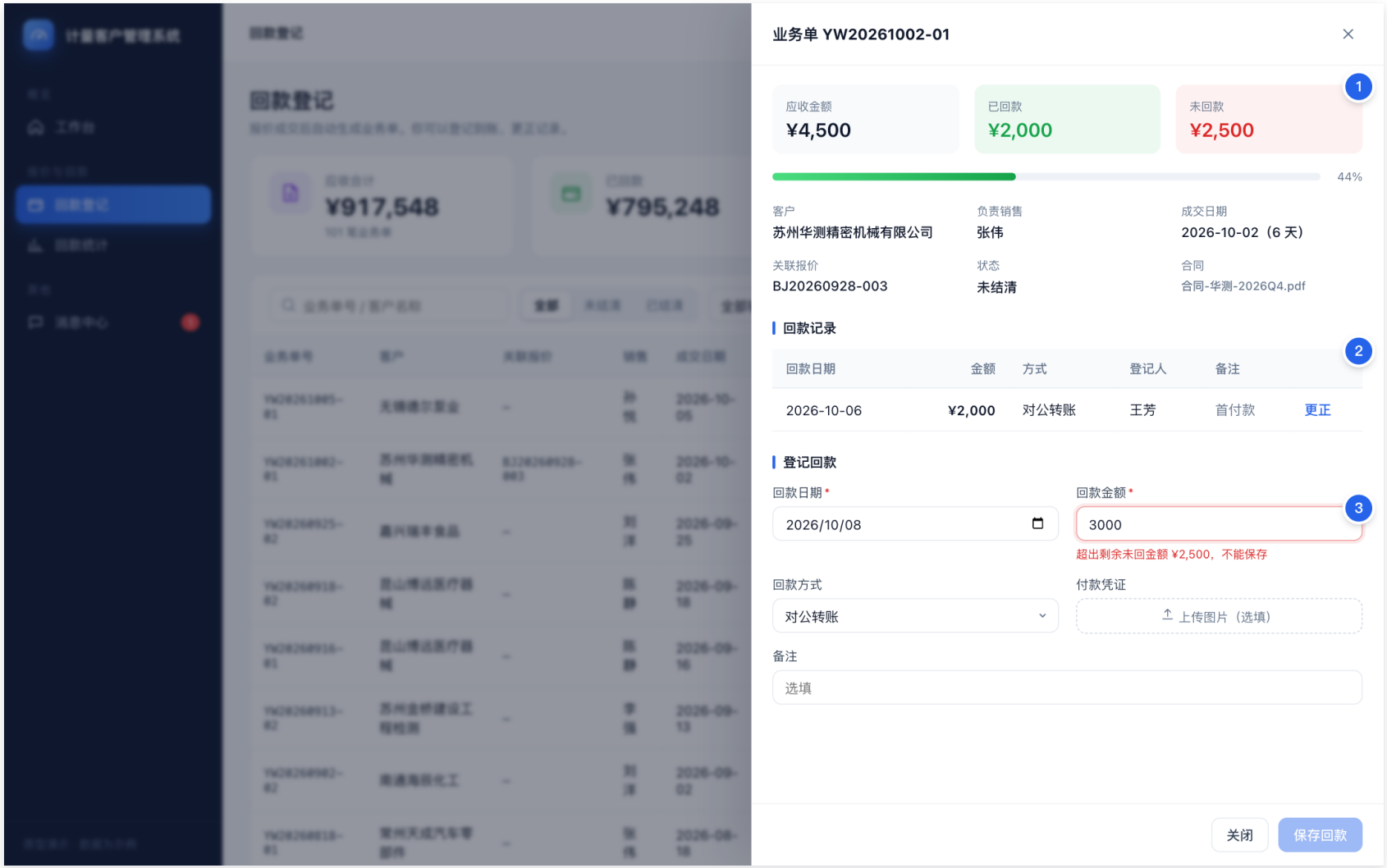
① Due total, paid, unpaid, collection rate

② All / open / settled; filter by sales

③ Open orders show aging: 60+ orange, 90+ red

Business orders are created when quotes close

Prototype • Order detail • Record payment



24 Order detail • Record payment

One order can have multiple payments

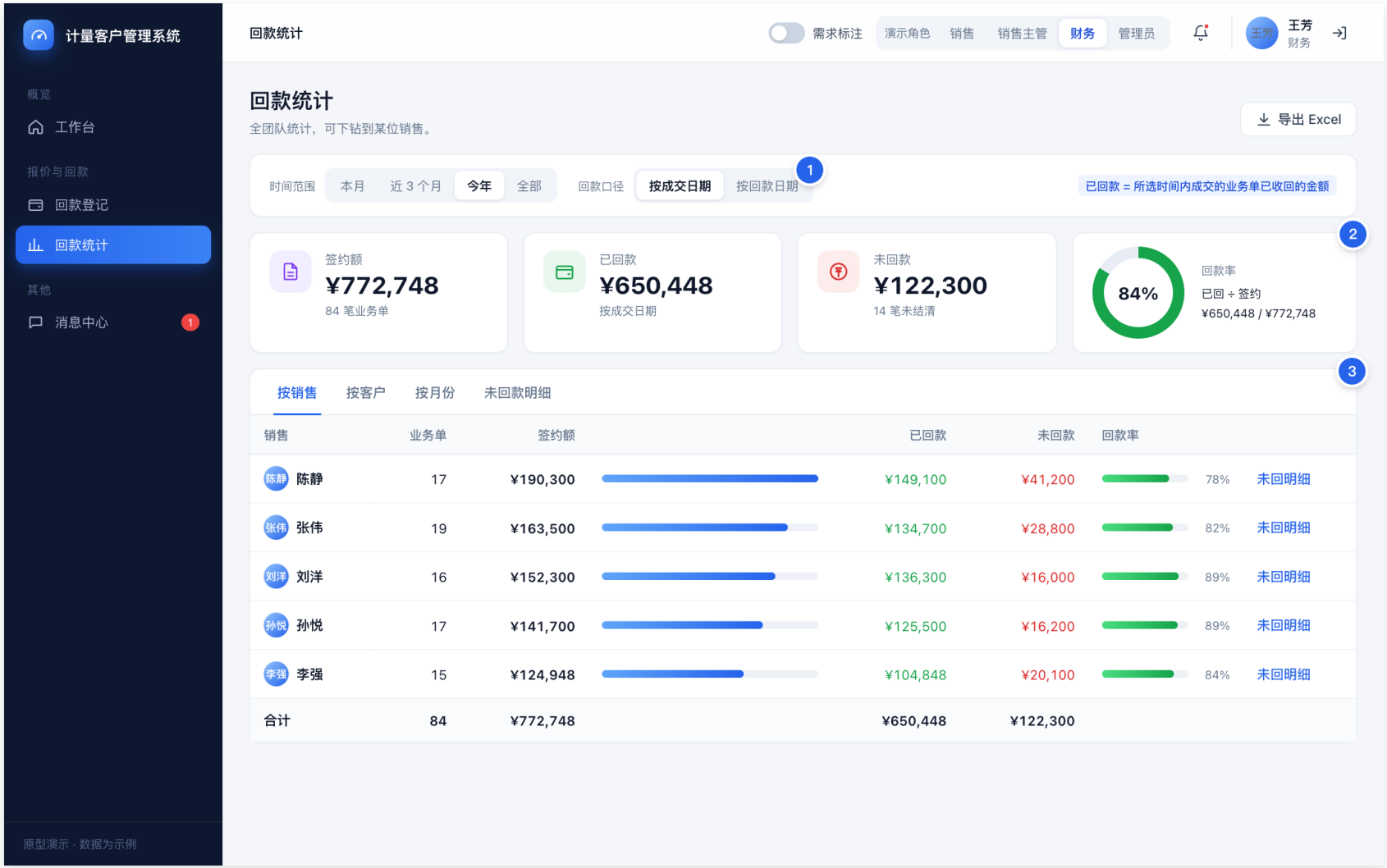
① Due, paid, unpaid, and progress

② Payment history; corrections need a reason and keep audit trail

③ Amount over remaining unpaid is rejected

Unpaid = 0 auto-settles; sales are read-only

Prototype • Collection stats • By sales



25 Collection stats • By sales

Finance and admin see all

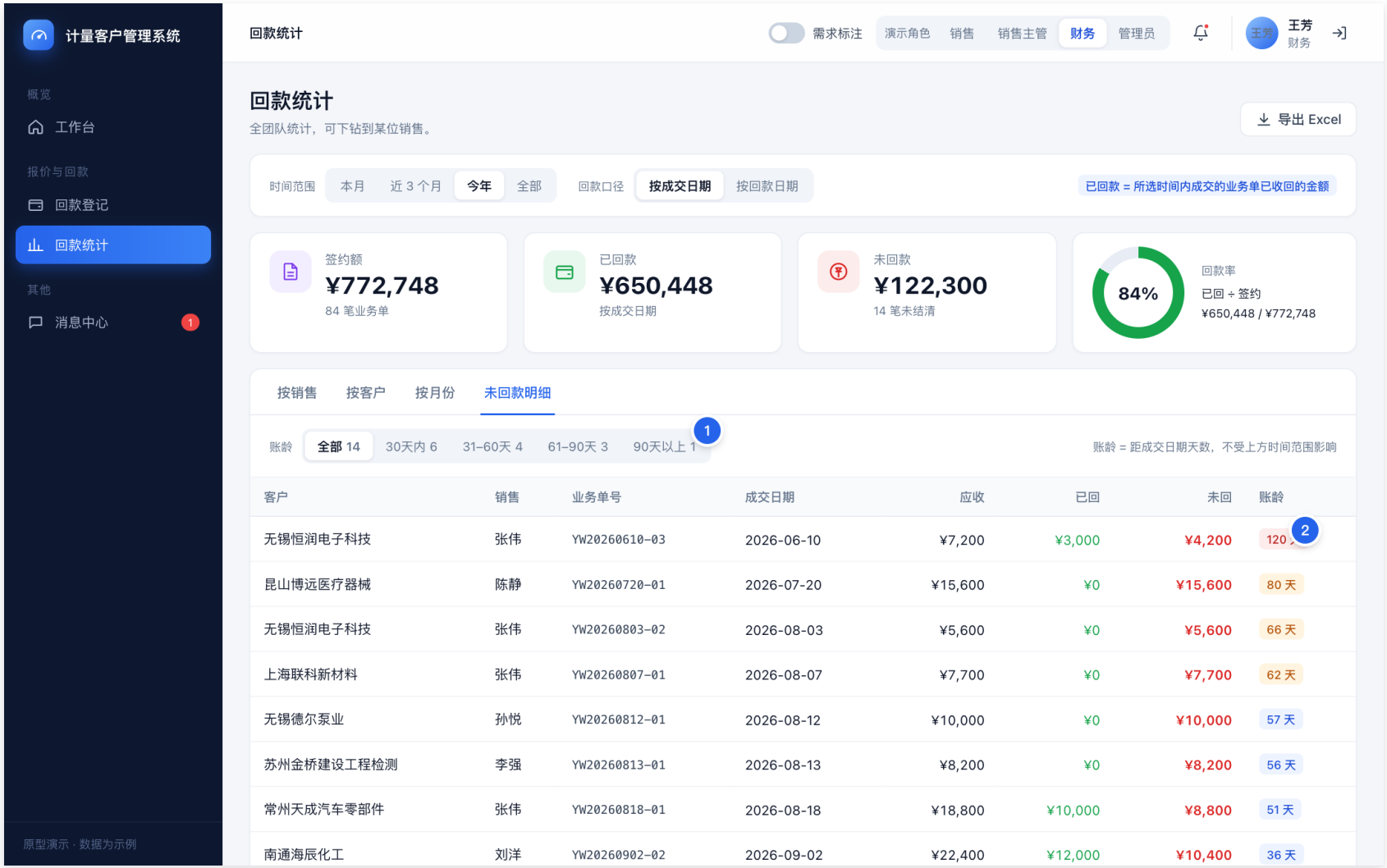
① Metric basis: by close date or payment date — stated on page

② Signed amount, paid, unpaid, collection rate

③ By sales / customer / month / unpaid detail

Ranges: this month, last 3 months, YTD, all — Excel export

Prototype • Collection stats • Unpaid detail



26 Collection stats • Unpaid detail

Filter by aging

① Aging buckets: ≤30, 31–60, 61–90, 90+ days

② Aging = days since close date

Managers drill from “By sales” into a person’ s unpaid detail

Prototype • Settings • Discount rights



27 Settings • Discount rights

Admin only

① Three approval tiers illustrated

② After changing thresholds, new quotes use the new rules

Also: accounts/roles, price list, reminder rules, pool rules, dictionaries

Prototype • Settings • Pool rules



28 Settings • Pool rules

Admin only

① Enable/disable the pool

② Days without follow-up before pool (default 90)

③ Former-owner reclaim cooldown (default 7)

Reminder settings similarly toggle each node

Prototype • Messages



29 Messages

In-app notifications

① Report done、calibration alerts、approvals、pool alerts、appeal results — click to open the page

② Mark all as read

No SMS or email this phase

Thank you

Please confirm the features above; feedback welcome anytime