Integrated Inspection Testing and Training Platform

Modules

1. Service Master Registry (Quality)
2. Client Directory + Portal (Admin/Coordinator)
3. Quotation (Coordinator/Finance)
4. Job Orders + Scheduling (Coordinator)
5. Field Execution (Inspector/Tester/Trainer)
6. Outputs & Publishing (Document Controller/Coordinator/Approver)
7. Controlled Stock (Letterheads, Wallet Cards, Stickers)
8. Tools/Instruments & Assets (Quality/Coordinator)
9. HR & Competence (HR/Quality/Management)
10. Finance & Invoicing (Finance)

MVP modules

1. **Users, Roles & Access (RBAC)**

- Roles: Admin, Coordinator, Inspector/Tester, Trainer/Examiner, Approver (Tech Manager / NDT Manager), Quality Manager, Management Representative MR, Quality Executive
- Permissions per module + audit logs

2. **Master Data**

- Clients, sites/projects
- Assets/equipment registry (tag/serial/category, history, next due)
- People registry (operators/trainees/candidates)

3. **Service Catalog & Policies**

- Service types/subtypes (Lifting, Orthopedic, NDT methods, Training courses, Operator cert types)
- **Approval required?** (yes/no) per subtype/category
- Approver routing role (TECH_MANAGER vs NDT_MANAGER)

4. **Job Orders & Scheduling**

- Job order creation with bundled line items (Inspection/NDT/Training/Op Cert)
- Assignment + calendar/dispatch

- Status tracking

5. **Templates & Digital Forms**

- Controlled templates (checklists, reports, certificates)
- Form execution UI (structured fields + attachments)

6. **Field App (Offline-first PWA)**

- Offline job access (assigned work)
- Evidence capture (photos/files)
- **FIR creation offline or later when the system goes online**
- Sync engine + pending queue

7. **Field Inspection Report (FIR) + Client Signature**

- One FIR per job order per day
- Client rep: name + title + phone + signature
- FIR PDF issuance + **public token share link active only after sync**

8. **Review / Approval (One-step, configurable)**

- Approver inbox
- Approve/reject with comments
- Enforced only when line item requires approval

9. **Document Issuance & Verification**

- Report/certificate generation (PDF)
- Document numbering rules
- QR / token verification page
- Versioning + revocation

10. **Training & Operator Certification**

- Course catalog, sessions, attendance
- Exams/results (if needed)
- Operator certificates (validity, renewals, history)

11. **Dashboards & Reporting**

- TAT (created→issued), overdue work

- Upcoming expiries (assets + operator certs)
- Basic exports (CSV/PDF)

12. Billing / Invoicing & Integrations

- Email/SMS/WhatsApp notifications

Phase 2 modules (when you start selling B2B)

12. **Multi-tenant (SaaS) Admin**

- Tenant provisioning, tenant-level configs, isolation
- Per-tenant numbering, logos, template sets

13. **Client Portal (Self-service)**

- Work requests, order tracking
- Secure downloads and verification
- Renewal reminders

15. **Advanced Quality / Compliance**

- NCR/CAPA workflows
- Document control workflows beyond templates

Must have

- **Single Job Order** that can bundle: inspection(s), NDT test(s), operator assessment/certification, training delivery. All modeule under 1 JO
- **Client + Site + Asset registry** (equipment items with serial/ID, project/ inspection location, history, certificates, sticker nos. and next due dates).
- **Client Directiory – All relevant information**
- **Scheduling & dispatch** (assign inspectors/examiners/trainers; avoid conflicts).
- **Sticker Module –** with QR code

- **Field execution app** (mobile/tablet) with checklists/templates, photo attachments, **offline-first (must-have)**. Simplified checklist that can be expanded. Simplified by default, Critical, Full. Giving Sticker numers with QR code
- **Field Inspection Report (FIR)** issued immediately from the field app, with **client representative signature capture**. Field Inspection Report to be generate immediately upon completing/ Partial completing JO.
- **Report + Certificate generation** (templates, numbering, approvals, digital signatures, QR verification).
- **Operator certification workflow** (candidate registration, assessment steps, outcomes, certificate/ID card).
- **Training management** (course catalog, sessions, attendance, exams, certificates). All training materials online. Not downloadable
- **ISO/IEC 17020 traceability**: audit trail, authorizations, competence records, controlled templates, approvals.

Should have

- Customer portal (download reports/certificates, track orders, request work).
- Integrations: accounting/invoicing (or basic invoicing), email/SMS/WhatsApp notifications.
- Equipment calibration and Tquipment Tools Issuance record
- HR Module - Examiner qualification tracking.
- QR asset tagging support.
- Analytics dashboards (utilization, turnaround, nonconformities, expiry forecasting).

Target scale and constraints

- ~200 job orders/month
- ~30 internal users (coordinators, inspectors, examiners, trainers)
- Deploy to **private cloud** (no strict data residency constraint stated)

Key entities

- **Client** (legal entity)
- **Site** (client location)
- **Asset/Equipment** (serial/tag, category, history)
- **Person** (operator/candidate/trainee)
- **JobOrder** (parent)
- **ServiceLineItem** (inspection / NDT / training / certification)
- **Assignment** (who will do what, when)
- **FormTemplate** & **FormResponse** (controlled templates + captured evidence)
- **EvidenceAttachment** (photos/docs)
- **Report/Certificate** (versioned outputs, status, numbering)
- **StaffCompetency** (internal qualification/authorization records)

Client Directory (Company Master Profile)

(With Client Portal + Client Notification Rules)

1. Client Master Profile

Client Basic Info

- Client Name (English and Arabic)
- CR Number (PDF upload)
- VAT Number + VAT Certificate (PDF upload)
- National Address (PDF upload)
- Head Office Address + City
- Website (optional)
- Bank details / IBAN letter (optional)

2. Departments & Contacts (Structured)

Create **department-based contact records** (not just one contact).

Contact Fields

- Full Name
- Role/Title
- Department
- Mobile (KSA format)
- Email
- WhatsApp (Yes/No)
- Office location (if relevant)
- Notes (e.g., “PO approvals only”)

Recommended Department Tabs

- Procurement
- Finance / Accounts Payable
- HSE / Safety
- Engineering / QAQC
- Plant / Equipment Department

3. Projects Register (Per Client)

Each client can have multiple projects. For each project:

- Project Name
- Location (City + GPS pin optional)

Project Key Contacts

- Project Manager (PM) name + mobile + email
- HSE Manager name + mobile + email
- Procurement contact name + mobile + email
- Plant/Equipment Manager name + mobile + email
- Site Admin / Timekeeper (optional)
- Purchaser

4. JO Registry (Per Client)

- List of all Job Orders (retrievable)
- Filterable by status (Draft / Scheduled / Completed / Published / Invoiced)

5. Equipment Register (Assets Under Each Client/Project)

Equipment Master Fields

- Certificate No. (retrievable)
- Equipment Type (Forklift, Reach Stacker, Crane, EWP…)
- Manufacturer
- Make / Model
- Serial Number
- Plate number / Asset/Equipment ID (client's number)
- Capacity (SWL / Rated load)
- Location / Project mapping
- Date of Inspection
- Date of Issuance of Certificate
- Next Due Date
- Inspector Name

6. People Register (Operators / Trainees / Competence)

Person Profile

- Full Name
- ID/Iqama (if allowed to store by client agreement)
- Company / Employer (contractor name)
- Trade / Role (Operator, Rigger, Signalman, etc.)
- Certificates No. (retrievable)

- Date of Issuance
- Expiry dates (competence validity)
- Photo (optional, if used for cards)

7. Downloads & Exports

One-click exports

- Client master file (PDF pack + Excel summary)
- Project master file
- Equipment list + due dates (Excel)
- Training matrix (people vs training/expiry)
- JO master List

8. Permissions & Roles (Internal)

- Admin (full edit)
- Coordinator (upload + view only)
- Finance (read + payment docs)
- Client portal user (view/download only for the client; scoped access)

Client Portal (Extension Layer)

9. Client Portal Enablement

- Portal enabled for selected clients (e.g., A-category)
- Portal access is configurable per client

10. Client Portal User Management

Client-side users are created/managed by Admin/Coordinator.

Client Portal Roles (Recommended)

- Client Admin (manages portal users)
- Procurement user (JOs + documents)
- HSE / Engineering user (certificates/reports)
- Plant/Equipment user (equipment + due dates)
- Finance user (invoices & payment status only)
- Read-only user

11. Portal Visibility Rules

Clients can view/download **published** items only:

- Published job orders
- Certificates / reports
- Training certificates & wallet card PDFs
- Equipment history linked to certificates

Drafts/internal notes are never visible.

12. Portal Finance View (Optional, Restricted)

Finance portal users can view:

- JO ↔ Invoice number
- PO document (if uploaded)
- Invoice amount + VAT
- Payment status (paid/partial/pending)
- Total billed vs paid vs outstanding

Clients cannot edit finance data.

Client Notification Rules (Embedded)

13. Notification Recipients (Who gets emails)

Notifications are email-based by default.

Primary recipient: "Requestor"

For each Job Order, the system must store a **Requestor Contact** (selected from the client's contacts list).

This Requestor is the **default recipient** for JO notifications.

Additional recipients (optional, configurable per client/project)

Coordinator can add CC recipients from:

- Procurement

- HSE
- Engineering/QAQC
- Plant/Equipment
- Finance/AP (finance-related only)

Rules:

- Recipients must be chosen from registered client contacts (no free-typing emails unless you allow it)
- All notification sending is logged

14. Notification Types (Minimum Required)

14.1 Job Order Created Notification (Email)

Trigger: JO is created / scheduled (after inspection request record is captured)

Recipients:

- Requestor (To)
- Optional CC list

Contents:

- JO number
- Client + project/site
- Services summary (no pricing)
- Planned dates (if available)
- Assigned team names (optional; you can hide this if you prefer)
- Link to client portal (if enabled)
- Reference documents (PO/email/verbal request record reference)

14.2 Job Order Published Notification (Email)

Trigger: JO is marked Published (certificates/reports released to client portal)

Recipients:

- Requestor (To)
- Optional CC list

Contents:

- JO number

- Summary of deliverables:
    - inspection reports/certificates
    - training certificates
    - wallet cards availability (PDF)
- Download/access instructions:
    - Portal link OR secure share links (if you use them)
- Due dates overview (optional)

14.3 FIR Notification (Email)

Trigger: FIR submitted and issued (post-sync)

Recipients:

- Requestor (To)
- Project key contacts (optional, configurable)
    - PM, HSE Manager, Site Admin/Timekeeper, etc.

Contents:

- FIR link (public-but-unguessable OR portal link)
- Inspection day summary
- Signature captured confirmation (if applicable)
- Timestamp

15. Notification Controls (Recommended)

Per client/project, allow toggles:

- Enable/disable each notification type
- Default CC lists per department
- Email templates per language (English/Arabic)
- Include attachments? (default: links only, not heavy PDFs)

System must log:

- Who received
- When sent
- Delivery status (sent/failed)

Key Principles

- Requestor is the default communication owner

- Published-only visibility for clients
- Finance view is role-gated
- Notifications are traceable and auditable

Workflow: Service Master Registry (Unified, Quality-Controlled)

Purpose

Create a single **Quality-owned master registry** of all services the organization performs (Inspection, Testing, Training, Operator Certification, Calibration).

This registry is the **single source of truth** that drives:

- quotation service selection (dropdown)
- job order scope and preloaded execution items
- field execution forms (checklists / proformas / assessments)
- certificate/report/card formats
- approval routing
- validity enforcement
- audit traceability & versioning

1. Ownership & Access Control

Owner

Quality Department

- Quality Manager
- Quality Executive
- Management Representative (MR)

Allowed Actions (Quality roles only)

- Create / edit service definitions
- Link standards / procedures / templates
- Define checklists / assessment templates
- Define outputs (certificates, reports, wallet cards)
- Define approval rules and validity rules
- Publish new versions

Read-only Users

- Coordinators, Inspectors, Trainers, Finance (view only)
- They cannot change service definitions

2. Service Catalog Structure (Unified)

Each service has:

2.1 Service Identity

- **Service Code** (unique, system-generated or governed format)
- **Service Name** (English + Arabic optional)
  - e.g., “Inspection – Mobile Crane”
- **Service Category** (one of):
  - Inspection
  - Testing
  - Training
  - Operator Certification
  - Calibration
- **Discipline** (optional refinement):
  - Lifting / HSE / NDT / Pressure / Electrical / etc.
- Status: **Active / Inactive**
- Effective Date (for versioning)

Rule: Only **Active** services appear in Quotation dropdowns.

3. Execution Model (What the Field Needs)

Quality sets “execution dependencies” per service:

3.1 Requires Equipment?

- Mandatory / Optional / Not Required

3.2 Requires Person?

- Mandatory / Optional / Not Required

Examples:

- Inspection – Forklift → Equipment Mandatory
- NDT – MPT → Equipment Optional (or Mandatory if you choose)
- Training – Work at Height → Person Mandatory
- Operator Certification – Mobile Crane → Person Mandatory
- Calibration – Load Cell → Equipment Mandatory

These flags drive:

- what coordinator must preload in JO
- what inspector/trainer must capture in field
- what UI components appear

4. Templates & Forms Linked to the Service

4.1 For Inspection/Testing Services

- Checklist Template (Critical master)
- Default checklist level shown in field:
    - Simplified / Expanded / Critical
- Minimum enforced level:
    - Simplified / Expanded / Critical
- “All OK” bulk-fill allowed? **Yes/No**
- Evidence policy:
    - Photos required? Yes/No
    - Documents required? Yes/No (optional rule)

Record Rule: Regardless of UI level used, the **stored audit record is always “Critical”**.

4.2 For Training / Operator Certification Services

- Proforma Template (identity + history)
- Assessment Template (questions)
- Pass/Fail criteria (score %, required sections)
- Practical assessment required? Yes/No (flag)

5. Standards & Procedures (Controlled References)

Quality links controlled references to the service:

- Standard(s) (e.g., ISO/EN/ASME/regulation)
- Work Instruction / Procedure (WI)
- Additional reference docs (optional)

These references automatically appear in:

- execution forms (header)
- reports/certificates
- audit exports

Inspectors/Trainers cannot change them.

6. Output Definition (What Documents Are Produced)

For each service, Quality defines the output package:

6.1 Output Types

Any combination of:

- Inspection Certificate
- Test Report
- Training Certificate (A4)
- Wallet Card
- Other controlled document (optional future)

6.2 Output Templates

- Template(s) per output type (versioned)
- Letterhead category:
  - Inspection/Test Letterhead
  - Training Letterhead
- Background handling:
  - Draft print copy (no background)
  - Final archival copy (with background + paper/card number)

This links directly to your letterhead/card stock control module.

7. Validity Rules (Service-Level Governance)

Quality defines:

- Max validity (e.g., 6 months / 12 months) OR "Not Applicable"
- Allowed preset options shown to inspector (e.g., 1/3/6/12/custom)
- Exception behavior:
  - If inspector selects > max → route to approval

8. Approval Routing (Service-Level Governance)

Quality defines:

- Approval required? Yes/No
- Approver role(s):

    - Technical Manager / NDT Manager / Sr Engineer / Team Lead
- Multi-approver behavior (if enabled):
    - “Any one can approve” (parallel) OR “Must all approve” (rare)

This is inherited automatically by:

- certificates/reports generated from the service

9. Commercial Control (Quotation Integration)

To support quotation creation cleanly:

- Each service has a “Quotation Display Name”
- Optional internal service grouping for dropdown UX:
    - Lifting Inspection
    - NDT
    - HSE Training
    - Operator Certification
    - Calibration

Prices do not live in the Service Registry (pricing stays in quotation/client agreements).

10. Versioning & Change Control (Mandatory)

Any change to:

- checklist
- standards/procedure links
- output templates
- validity/approval rules
- assessment/proforma

…creates a **new service version**.

Rules:

- Old versions are retained
- Past Job Orders reference the service version active at the time
- No deletions; only deactivation + versioning
- Change requires:
    - change reason
    - approved-by (Quality Manager/MR)

11. Operational Effects (What This Enables)

Once this registry exists:

- Coordinators build quotations using **service dropdown**
- Job Orders inherit services, generating preloaded execution slots
- Inspectors/Trainers see correct forms, rules, outputs automatically
- Certificates/reports/cards follow consistent lifecycle and controls
- Finance receives clean, service-based executed quantities

Key Principles (Non-Negotiable)

- **No Service in Registry → cannot be quoted → cannot be executed**
- Services define governance; execution cannot override governance
- Equipment/person are **execution parameters**, not registry roots
- One unified catalog prevents duplicates and “free text” chaos

Workflow: Quotation Module (Coordinator)

Goal

Coordinator creates a formal quotation (with pricing + VAT + selected T&Cs) that later becomes the only allowed source for creating a Job Order.

Inspectors never see pricing.

1) Create Quotation (Entry Rules)

Rule: A Job Order can only be created from an **Approved/Accepted Quotation**.

Quotation statuses

- Draft
- Sent
- Accepted (client confirmation / PO / verbal)

2) Quotation Header (Client + Project)

Step 2A — Select Client

- Search/select existing client
- If new: create minimal client (name, VAT no if applicable, address, contact)

Step 2B — Select Project/Site

- Select existing project/site under client OR create new
- Project fields: name, address, site contact(s)

Step 2C — Quotation metadatary

- Quote date (today by default and changable)
- Validity period (e.g., 7/14/30 days — configurable default 30 days)
- Reference number (auto-generated: e.g., QT-TUVINSP-####)
- Currency (default SAR)

3) Service Selection + Pricing (Line Items)

Coordinator builds the quote using your **Services Catalog**.

Step 3A — Add Line Items

Each line item includes:

- **Service item (from Service Master Registry – published services)**

  e.g., “Inspection – Mobile Crane”, “Inspection – Forklift”, “Operator Certification – Motor Grader”

  - System must show only services that are:
    - **Active**, and
    - **Published** (Quality-approved), and
    - Effective (based on version effective dates)
  - Quotation must store service reference as:
    - **service_id (stable service identity)**
    - **service_version_id (the published version used at quote time)**
    - Service name snapshot (for PDF/history safety)
- Quantity (number)
- Unit price
- **Unit type (default from service definition; editable if permitted)**

  (per equipment / per person / per day / per session / Per visit / Per Linear Meter)

- Line total = qty × unit price
- Notes (optional)
- **Description box along each line item / service**
  - Description should **auto-populate from Service Master** by default (service description / scope summary if maintained there)
  - Coordinator may add quote-specific notes (optional)

Important rule: pricing fields are visible only to roles like Coordinator/Admin/Finance (not Inspector).

If a required service is missing from Service Master

System should support one of the following (configurable policy):

- **Service Request to Quality:** coordinator submits a “service request” from quotation; Quality creates/publishes service; then it becomes selectable.

  OR

- **Coordinator creates a service entry flagged “Pending Quality Review”:**
    - Service is created in draft/temporary state and clearly flagged
        - becomes selectable immediately (but flagged), **or**

4) VAT & Totals

- VAT % default 15% (editable per quotation)
- System calculates:
    - Subtotal
    - VAT amount
    - Grand total

Also generate:

- Total in digits
- Total in words (e.g., “One hundred twenty-three thousand SAR only”)

5) Terms & Conditions (Preset Sets + Payment Term)

Step 5A — Select T&Cs Set (preloaded)

Coordinator selects 1 preset template, e.g.:

- Inspection T&Cs
- Training T&Cs
- Testing/NDT T&Cs
- Online testing T&Cs
- (You can add more)

Step 5B — Pricing/Payment Term (manual field)

Coordinator must fill a single “Payment Terms” field each time, examples:

- 100% advance
- 50% advance, 50% on delivery of certificates
- 100% upon delivery of certificates
- As per PO
- Credit period: 30 days, 60 days, etc.

(Everything else stays standardized.)

Step 5B — Bilingial

The quotation will be bilingual English and Arabic (All headers and Total Amounts will be bilingual)

6) Generate Quotation PDF (Standard Format)

- Use your uploaded quotation template (letterhead style)
- Insert:
    - Client + project
    - Line items table
    - VAT summary
    - Total in words and digits
    - Selected T&Cs set
    - Payment terms (custom field)
    - Signature block (your company)
    - Company Account information

System outputs:

- PDF stored in the system
- Quote version (v1, v2…) if edited after sending

Note (Service Master alignment): the PDF should render service name/description as captured at the time of quotation, while internally the quotation retains service_id + service_version_id for traceability.

7) Send to Client + Track

Coordinator actions:

- “Send Quotation” button:
    - email to selected client contact(s)
    - attach PDF
    - or download and send

System:

- Marks status = Sent
- Logs time + recipients

8) Acceptance (How quote becomes usable for JO)

Acceptance methods (choose one on the quote):

- PO received (enter PO number + upload)
- Verbal confirmation (enter who confirmed + notes)
- Email confirmation (upload/email reference)

System:

- Marks status = Accepted
- Locks pricing (no edits unless “Revise quote” creates new version)

Outputs

- Quotation record + version history
- PDF document
- Selected T&Cs set + payment term text
- Accepted confirmation evidence (PO/verbal/email)
- Ready flag: “Create JO from this Quote”

Service Master Registry traceability (added):

- Each line item retains:
    - service_id
    - service_version_id
    - service name/description snapshot used for PDF and history

      This ensures Job Orders and audits always reference the correct governed service definition used at quotation time.

<u>Workflow: Job Order Creation (Based on Accepted Quotation)</u>

Purpose

Enable a Coordinator to create and control a Job Order (JO) strictly from an **Accepted Quotation**, while:

- selecting full or partial quotation items
- optionally changing prices (permission configurable per coordinator role)
- preparing **preloaded execution items** for field staff
- tracking **planned vs executed quantities**
- supporting **multi-inspector / multi-role assignment**
- allowing **on-site added services/equipment** without blocking execution
- enforcing **commercial control before final issuance**
- ensuring **ISO/IEC 17020 inspection request compliance**
- maintaining full **audit traceability and governance**

1. Entry Rule

- A Job Order can **only** be created from an **Accepted Quotation**
- “Accepted” means at least one of the following is recorded:
    - Purchase Order (attached)
    - Verbal confirmation (recorded)
    - Email confirmation (attached)

Action

Coordinator clicks **“Create Job Order”** on the accepted quotation.

2. JO Draft Auto-Creation (From Quotation)

System automatically creates a **JO draft**, inheriting **read-only reference data** from the quotation:

- Client
- Project / Site
- Client contacts
- Quotation number & version (reference only)
- All quotation line items:
    - Service
    - Service version (from Service Master Registry)
    - Quantities
    - Prices

At this stage:

- **All quotation items appear by default**
- No execution data exists yet

3. Select Scope for Job Order (Full / Partial)

Coordinator reviews quotation items in a **tabular scope-selection view**.

Options

- Select All
- Include item in JO (checkbox)
- Exclude item from JO

Rules

- Only **selected items** become part of the JO
- Excluded items:
  - remain part of the quotation
  - are **not visible** to inspectors or trainers
  - are not executable

This establishes the **operational scope** of the JO.

4. Quantity & Price Adjustment (Controlled)

4.1 Quantity Adjustment (Allowed)

Coordinator may adjust **planned quantities** per selected service item.

Example:

- Quoted: Mobile Crane Inspection – Qty 5
- JO Planned: Mobile Crane Inspection – Qty 3

Rules:

- Planned quantity = expected execution
- This is **not** final billing quantity
- Original quoted quantity is preserved for traceability

4.2 Price Adjustment (Permission-Based)

- Unit prices are **locked by default**
- Price modification is allowed only if:
    - Coordinator role permits it **OR**
    - Manager approval is granted

Mandatory system logging:

- Old price
- New price
- Changed by
- Date & time
- Change reason

Hard rule:

Inspectors and trainers **never see prices**.

5. Create Preloaded Execution Items (Critical Requirement)

For each selected service item with planned quantity > 0, the system generates **preloaded execution instances**, based on the **service_version**.

Example

- Inspection – Mobile Crane – Qty 3

  → Creates:

- Mobile Crane #1
- Mobile Crane #2
- Mobile Crane #3
- NDT – MPT – Qty 1

  → Creates:

- MPT Test #1

These execution instances:

- Are visible to inspectors/trainers
- Eliminate dropdown searching in the field
- Are later linked to:

    - actual equipment (via registry/QR/sticker)
    - actual persons (operators/trainees)

Applies to:

- Inspections
- **Testing (NDT and non-NDT)**
- Operator Certification (person-based)
- Training topics / participant slots

This step is essential to make **field execution fast, structured, and error-free**.

6. Assignment & Teaming

Coordinator assigns personnel to the JO:

- One or more Inspectors
- Trainers / Examiners (if applicable)
- Optional Lead Inspector

Capabilities

- Multiple inspectors can work on the same JO
- Inspector + Trainer can be assigned together
- Any assigned inspector's name may appear on final certificates (based on actual execution)
- Regional teams are supported

System actions

- Sends notifications to all assigned staff
- Records assignment history

Delegation

- Assigned inspector may reassign/share the JO with another inspector
- Coordinator is notified
- All reassignments are audit logged

7. JO Creation & Status

Coordinator clicks **“Create Job Order”**

System:

- Generates JO number
- Sets JO status:
  - Draft (not yet assigned), **or**
  - Scheduled (assigned)
- Locks the **initial planned scope**
- Allows **controlled coordinator edits** during execution phase
- Stores permanent linkage to:
  - Original quotation (commercial intent)
  - JO-selected scope (operational truth)

8. Change Handling During Execution (Operational Reality)

8.1 Quantity Changes by Inspector

During execution:

- Some equipment may not be inspected
- Some trainees may not attend

Inspector records **actual executed quantities**.

System:

- Preserves original planned quantity
- Stores actual executed quantity separately
- Maintains full traceability:
  - Quoted → Planned → Executed

8.2 Additional Items Added at Site (Offline-Safe)

If the client requests **additional inspection or testing services** at site:

Inspector may:

- Add new service item from the **Service Master Catalog**
- Enter quantity and justification notes

System behavior:

- Flags item as **“Added at Site”**

- Blocks all price visibility
- Records:
    - who added it
    - when
    - justification

Critical Execution Rule (Offline-Safe):

- Inspector is **allowed to immediately execute** added-on-site items
- Inspector may:
    - complete checklists / assessments
    - include items in FIR
    - generate draft reports/certificates (without background)

Coordinator approval is NOT required to proceed with execution.

This ensures:

- no execution delays in remote/no-internet locations
- no loss of operational data
- no opportunity for silent execution outside the system

8.3 Approval & Pricing Gate Before Final Issuance (Commercial Control)

Before **final issuance, publishing, or finance handoff**, the system enforces a control gate:

If any items are marked **“Added at Site”** and are **Pending Coordinator Approval**:

System blocks:

- final certificate issuance
- publishing to client
- finance submission

Coordinator must:

- Review added-on-site items
- **Assign internal pricing** to each approved item
- Approve or reject the item

Once approved:

- Item becomes part of the JO operational scope
- Pricing is recorded internally

- Item flows to Finance for invoicing
- Final issuance is unblocked

All actions are:

- Logged
- Attributed
- Fully traceable

9. Finance Reference Output (Clarity Only)

(Not a finance workflow)

Finance will later receive:

- Original quotation
- JO planned scope
- Actual executed quantities
- Approved on-site added items **with coordinator-assigned prices**

This forms a clean, auditable basis for invoicing.

10. Inspection Request Capture (ISO/IEC 17020 – Controlled & Mandatory)

Purpose

Ensure every Job Order has a **controlled Internal Inspection Request record** that:

- documents what the client requested
- records how the request was received
- consolidates scope and quantities
- provides objective evidence for ISO/IEC 17020
- becomes part of the controlled JO file

Key Principle

Regardless of how the request is received (PO, email, verbal), the **system always generates an Internal Inspection Request Form**.

10.1 Mandatory Internal Inspection Request Form

For every JO, the system generates **one Internal Inspection Request Form**.

This form is:

- Mandatory
- Non-deletable
- Version-controlled
- Audit logged
- Permanently linked to the JO

Clients are not required to submit this form themselves.

10.2 Timing Rule

The Inspection Request Form must be generated:

- After JO scope is finalized
- Before JO is marked Created / Scheduled

JO creation **cannot complete** without this step.

10.3 Request Source Selection (Mandatory)

System prompts:

"How was the inspection request received?"

Coordinator selects **one**:

1. Purchase Order (PO)
2. Email
3. Verbal Request
4. Other (configurable)

10.4 Auto-Populated Inspection Request Fields

System-generated form includes:

- Client name
- Project / site
- Client requestor / contact
- Date of request (auto-derived)

Date of Request Rule

- PO → PO issue date
- Email → email confirmation date
- Verbal → quotation issue date

Date is locked once generated.

10.5 Source Evidence Attachment

- PO → PO document attached
- Email → email PDF attached
- Verbal → internal form itself is evidence
- Other → optional supporting docs

Attachments **support** the form; they do not replace it.

10.6 ISO/IEC 17020 Compliance Rules

- Exactly one Inspection Request Form per JO
- Form is mandatory, non-deletable, version-locked
- Source is declared and auditable
- All changes are traceable (who / when / why)

Key Design Principles (Developer Guidance)

- Quotation = commercial intent
- Job Order = operational truth
- Execution = factual truth
- No overwrites — only versioning and deltas
- Inspectors never see prices
- Every change records:
  - Who
  - When
  - Why

Workflow: Sticker Management Module (Series & Inventory Control)

Purpose

Provide **strict control, traceability, and accountability** over inspection stickers by treating them as **controlled inventory**, ensuring:

- every sticker number is traceable
- every used sticker is tied to a report
- misuse, wastage, or unreported inspections are detectable
- inspectors cannot use stickers without system records

1. Sticker Definition (Physical Reality)

Sticker Types Covered

- **Big Stickers** (large equipment)
- **Small Stickers** (small tools)

Each physical sticker has:

- A **pre-printed unique sticker number**
- A **common QR code** (same on all stickers)
  - QR redirects to a **verification webpage**
  - User enters sticker number or certificate number to retrieve report

The system does **not** generate individual QR codes.

2. Sticker Series Registration (Stock Entry)

Action: Register New Sticker Series

When stickers are received from printing facility:

Coordinator/Admin enters:

- Sticker type (Big / Small)
- Series start number (e.g. 0001)
- Series end number (e.g. 1000)
- Printing batch reference (optional)

- Date received

System behavior:

- Creates **individual sticker records** internally:
  - Sticker #0001
  - Sticker #0002
  - …
  - Sticker #1000
- All stickers start with status: **In Stock**

This step is **mandatory** before stickers can be issued.

3. Sticker Bundling (Operational Convenience)

Purpose

Allow bulk control while keeping individual traceability.

Coordinator can:

- Create bundles from registered series, e.g.:
  - Bundle A: 0001–0100
  - Bundle B: 0101–0200

Each bundle has:

- Bundle ID
- Sticker range
- Status

4. Issuing Stickers to Inspectors (Critical Control Point)

Action: Issue Sticker Bundle

Coordinator assigns a bundle to an inspector.

System records:

- Inspector name
- Sticker range issued
- Issue date
- Issued by (coordinator)

Sticker status changes:

- From **In Stock**
- To **Issued to Inspector**

At this point:

- Inspector is **fully accountable** for every sticker in the range

5. Inspector Sticker Usage During Inspection

Inspector Action (Field)

While preparing inspection data or report:

- Inspector **must enter sticker number** applied to the equipment

System Validation (Hard Rules)

System checks:

- Sticker number exists
- Sticker is issued to that inspector
- Sticker status = Issued (not used / not invalid)

If valid:

- Sticker status changes to **Used**
- Sticker is automatically linked to:
  - Equipment
  - Job Order
  - Inspection report / certificate number

If invalid:

- System blocks submission
- Inspector cannot proceed

6. Automatic Sticker–Report Mapping

System maintains a **live sticker usage table**:

Sticker No	Inspector	Status	Report No	JO No	Equipment

0043	Inspector A	Used	RPT-2025-041	JO-118	Mobile Crane
0044	Inspector A	Used	RPT-2025-042	JO-118	Forklift
0045	Inspector A	**Unused**	—	—	—

This table is **not editable**.

7. Unused & Suspicious Sticker Detection (Key Feature)

Automatic Monitoring

System continuously checks:

- Stickers issued but **never reported used**
- Large gaps in usage
- Stickers issued long ago but still unused

Highlighting Rules

- Stickers unused beyond next issuance → **Flagged**
- Frequent unused stickers → **Inspector risk indicator**

This directly exposes:

- Unreported inspections
- Potential misuse
- Loss or leakage

8. Lost / Damaged Sticker Reporting

Inspector Action

If sticker is:

- Lost
- Damaged
- Misprinted

Inspector must:

- Mark sticker as **Lost/Damaged**
- Provide reason (mandatory)
- Upload picture of damaged sticker

The event must be verified and marked accepted by coordinator

System:

- Marks sticker as **Invalid**
- Prevents future use
- Logs incident permanently

9. Verification via Common QR Code

Public Verification Flow

Anyone scans QR on:

- Sticker OR
- Certificate

System opens **verification page**:

- User enters:
  - Sticker number OR
  - Certificate number Or
  - Both

System displays:

- Inspection status
- Equipment details
- Validity

This keeps QR simple and robust.

10. Inspector Stock View & Requests

Inspector can view:

- Sticker range issued
- Used stickers
- Remaining stickers
- Lost/damaged stickers

Inspector can:

- Request additional sticker bundles via system

11. Low Stock & Reorder Alerts

System-Level Monitoring

System tracks:

- Total unissued stock
- Issued but unused stock

Alerts:

- Low stock threshold reached → notify coordinator
- Reorder reminder generated

12. Management & Audit Reports

System provides reports:

- Stickers issued per inspector
- Stickers used vs issued
- Unused stickers per inspector
- Lost/damaged stickers
- Sticker → Report → Certificate traceability

Job Order Execution Workflow

Inspection & Testing (Offline-First, Audit-Ready)

Inspector App – Offline-First Execution + FIR + Certificate/Test Report Issuance + Publishing + Finance Handoff

This is the end-to-end execution workflow for **inspection and testing job orders**, including offline-first operation, FIR generation, client signature or acceptance, optional approval routing, certificate/test report issuance, letterhead control, publishing, and finance handoff.

0. Purpose

Define the end-to-end operational workflow for executing **inspection and testing services** under a Job Order (JO), including:

• execution against preloaded **service-based scope**

• evidence capture and checklist completion

• controlled sticker usage (where applicable)

• FIR generation and client sign-off (or client-absent email acceptance)

• certificate / test report package generation (with optional approval routing)

• letterhead (paper) control via background finalization

• publishing and verification

• finance handoff for invoicing

This workflow applies to:

• Equipment Inspections

• NDT services

• Non-NDT testing services (load tests, pressure tests, functional tests, Amma test, Hydro tests etc.)

A. Preconditions

A1. Job Order Setup

• Job Order exists and includes:

- Client + site/project + client contact(s)
- At least one client email address (mandatory if FIR signature is not captured)
- One or more **service line items** (Inspection / NDT / Testing / etc.)
- **Preloaded execution instances** generated from the JO scope

  (e.g., Mobile Crane #1…#N, Load Test #1…#N, UT Test #1…#N)

Important Alignment

Execution is driven by **Service Versions** from the Service Registry, not free-form equipment selection.

A2. Inspection / Testing Request Record

• An **Internal Inspection Request Form** exists and is linked to the JO

• Generated during JO creation

• No approval workflow applies to this form

A3. Asset & Equipment Policy

System policy defines whether:

• assets must exist in Equipment Registry, OR

• inspector may add unregistered equipment (creates draft asset pending sync)

A4. Service Policy (from Service Registry)

For each service version, the system defines:

• checklist behavior

- default checklist level (Simplified / Expanded / Critical)
- whether Critical is mandatory

  • approval policy

- approval required (Yes/No)
- approver role (Technical Manager / NDT Manager / etc.)

  • certificate / test report outputs

  • validity rules (if applicable)

  • sticker requirement:

- Required
- Optional
- Not Applicable

B. Inspector Execution (Offline-First)

B1. Receive Assignment

• Online: notification

• Offline: JO available if previously synced

B2. Open Job Order

UI displays:

• Client / site / project

• Service-based scope summary

• Assigned service line items

Inspector taps **Start**

System records:

• started_at timestamp

• JO status → In Progress (local if offline)

B3. Select Service Line Item & Execution Instance

Examples:

• Inspection – Mobile Crane → Mobile Crane #1

• NDT – Magnetic Particle Test → MPT #1

• Testing – Load Test → Load Test #1

UI displays:

• Preloaded execution instances

• Option to add additional execution instances (policy-controlled)

B4. Asset / Subject Identification (Service-Dependent)

Depending on service type:

Inspection Services

• Select from:

1. Preloaded equipment instance
2. Equipment Registry
3. Add ad-hoc equipment (draft asset)

Testing Services (NDT / Non-NDT)

• Equipment selection may be:

- mandatory (e.g., load test on crane)
- optional (e.g., weld UT)
- descriptive only

    • Service definition governs requirement

B5. Equipment / Subject Data Capture

• Capture or confirm identity data:

- Manufacturer, model, serial, capacity, etc. (if applicable)

    • OCR via data plate allowed

    • Human confirmation mandatory

    • Stored as inspection/test snapshot

If previous inspection exists:

• Inspector may enter or scan **previous sticker number** to preload identity

• If no sticker applies → handled in B11

B6. Validity Selection (If Applicable)

• Quick buttons: 1 / 3 / 6 / 12 months + Custom

• Validity rules enforced by Service Registry

• If inspector exceeds allowed validity:

- approval workflow triggered automatically

B7. Checklist Execution (Service-Driven)

Checklist is loaded from **Document Registry** via **Service Version**.

Checklist behavior:

• Default checklist level applied

• Expansion allowed unless locked

• Mandatory Critical checklist enforced where defined

Checklist supports:

• Pass / Fail / N/A

• Numeric readings with units

• Comments

• Photo evidence (mandatory on Fail)

Header fields include:

• Service name

- Equipment / subject details (if applicable)
- Standard reference
- Work instruction reference
- Manufacturer
- Model / Year
- VIN / Serial No.
- Last date of inspection (manual entry or fetched from previous record)
- Inspector name
- Date of inspection
- Next date of inspection
- Location (Site / project Details as per JO)
- JO number
- Any additional fields configured at checklist creation

B8. Tools Used

- Inspector selects tools used (from Tools Registry)
- Tool calibration visibility enabled
- Mandatory tool selection enforced where defined
- Every inspector shall have a set of tools issued to him in Tools registry. Those all ll appear as tabs and he can just click on tabs to mention the ones used during inspection.

B9. Evidence Capture

- Photos / documents:
    - captured live OR uploaded
        - Minimum evidence enforced per service

• Stored offline and synced later

B10. Outcome

Inspector records outcome:

• Pass / Fail / Not Inspected

Fail handling:

• Mandatory findings notes

• Mandatory evidence

• Voice-to-text allowed

B11. Sticker / Tag Handling (Controlled & Conditional)

B11.1 Sticker Requirement Decision

Sticker behavior is governed by **Service Version**:

Case A – Sticker Required

• Inspector must enter or scan sticker number

• Validation:

- sticker exists
- issued to inspector
- unused

Case B – Sticker Optional

• Inspector may enter sticker number OR select:

→ **Sticker Not Applicable**

Case C – Sticker Not Applicable

(Examples:

• NDT services

• Non-tagged equipment

• Certain inspections defined by Quality)

• Inspector must explicitly select:

→ **Sticker Not Applicable**

• System records justification automatically via service policy

System will **not allow submission** if:
• sticker is required AND
• neither a sticker number nor “Not Applicable” is selected

B11.2 Offline Sticker Reservation

• Offline: sticker marked **Reserved (Offline)**

• Final validation occurs on sync

Sticker becomes **Used** only when:

• execution is finalized AND

• certificate/test report record is created

B12. Repeat Loop

Repeat B3–B11 for all execution instances.

B13. Added-at-Site Scope

• Inspector may add additional services/equipment

• Marked as **Added at Site**

• Execution allowed immediately (offline-safe)

• Pricing hidden

• Coordinator assigns price later **before final issuance**

B14. Complete Site Work

Inspector taps **Complete Today's Work**

Triggers FIR generation.

C. FIR (Field Inspection Report) + Client Signature / Client Absent Email Acceptance

C1. FIR Generation Rule (Multiple FIRs per JO)

Under one Job Order, there can be **multiple FIRs**, generated whenever the inspector completes a subset of work.

FIR Numbering (per JO)

FIR number format:

- **FIR-JO<JO_NUMBER>-01**
- next FIR in same JO: **…-02**, **…-03** etc.
- for a new JO, numbering restarts at **…-01**

Trigger: each time inspector chooses to finalize a visit/subset and generate FIR.

C2. Auto-generate FIR Draft (Offline-Capable)

FIR aggregates all equipment handled in that FIR instance (subset), including:

- JO + client/site/project
- inspector name
- arrival/start time on site (if captured)
- equipment list (equipment type, serial no, manufacturer, sticker no) + outcomes
- tools used summary (as captured)
- timestamp + location fields if enabled (for indivisual inspector in HR module)

Offline: FIR saved as **PendingSync**.

C3. Signature Capture (Standard Case)

Client representative fields:

- name
- title

- phone
- signature

Signature captured on inspector device.

FIR finalized and queued for sync.

C4. Client Absent / Signature Not Captured (Controlled Exception)

If signature cannot be captured, inspector selects:

- **Client Absent / Not Available** (or similar controlled reason)

C4.1 Email Requirement Logic

System checks if client email exists on JO contact(s):

- If exists → proceed
- If missing → app prompts inspector to enter client email (mandatory)

C4.2 System Email Acceptance Disclaimer

On issuance (after sync), system emails the FIR to the client contact with disclaimer text embedded in the email:

- client was not present at time of FIR closure
- FIR is treated as accepted unless the client replies with objections within a defined period (you may set this policy, e.g., 24 hours, or "promptly")

C4.3 Evidence Binding

The sent email record (message metadata / PDF attachment / delivery record as available) becomes part of FIR (last page) record as supporting evidence.

C5. FIR Issuance and Distribution

After sync:

- server generates FIR PDF
- auto-email FIR PDF to client contact
- inspector gets "Copy share link" (public-but-unguessable token link)

D. Certificate / Report Package Generation, Approval, Issuance

D1. Generate Draft Package

System generates documents per completed equipment instance / line item.

Failed Item Handling

- Certificates for Failed items are still issued with status “Failed”
- Failed certificates do **not require** letterhead number entry
- Failed certificates may be rendered with background (letterhead) by default and are publishable without letterhead control

D2. Optional Approval Routing (Policy-Driven)

If requires_approval = true for that equipment subtype/line item:

- system notifies configured approver role
- approver approves/rejects
- on rejection, inspector receives reason and rework required

  If approval not required:

- documents can be issued immediately

D3. Certificate Issuance (Digital Plain Print Version)

On issuance:

- system creates official PDF **without background** (plain) intended for printing
- inspector and relvant document controller receives notification

D3.1 Numbering Rule

Certificates must be uniquely numbered, non-sequential and non-guessable.

Prefix contains the string you specified **only in the certificate numbering format**, not in narrative text, e.g.:

- **TUVINSP-JO01-15975**

  Next could be:

- **TUVINSP-JO01-21282**

(Only used as the internal visible certificate identifier string.)

E. Letterhead Control and Background Finalization

E1. Background Definition

“Background” refers to Times United’s **letterhead template overlay** used by the system for final archival rendering, matching the printed letterhead design.

E2. Printing on Pre-numbered Letterhead

Likely desktop flow:

- Inspector or relevant document controller prints the **no-background** PDF onto the pre-numbered letterhead paper.

E3. Enter Letterhead/Paper Number

Inspector or relevant document controller enters paper number per certificate.

System validates:

- number not already used
- correct format (configured)

E4. Generate Final Archival Digital Copy

System re-renders the certificate with:

- letterhead background overlay

- embedded paper/letterhead number

This becomes the controlled archival digital version (no scanning required).

F. Publish to Client

F1. Publish Documents

Authorized roles (inspector/document controller/coordinator) can publish.

Client access methods:

- client portal, or
- shareable token link (public-but-unguessable)
- download and share pdf

F2. Publishing Rules by Outcome

- **Failed certificates:** publishable immediately (no letterhead dependency)
- **Passed certificates:** publishable once final archival copy is generated (paper number recorded)

F3. JO Closure

JO is marked **Closed** once:

- required documents are issued and published (as per scope), AND
- FIR(s) are issued for the completed work

G. Offline Sync and Conflict Resolution (Explicit Rule)

G1. Sticker Conflicts

Handled per Section B11 (Reserved → Used; reassign if conflict).

G2. New/Unregistered Equipment Conflicts

On sync, if a newly created offline equipment record matches an existing registry record (e.g., same serial/VIN):

- system prompts merge/attach to existing equipment record
- prevents duplicate asset creation
- logs merge decision

G3. Evidence Upload Failures

If evidence fails to upload:

- inspection submission remains PendingSync
- app prompts retry
- system prevents issuance if mandatory evidence is missing (policy)

H. Finance Handoff and Invoicing

H1. Send JO Summary to Finance

System emails Finance (or creates finance task) including:

- services delivered (actual executed quantities)
- equipment list, operators List (category and quantity), Trainees List (category and quantity), Conducted Tests Details
- certificate numbers
- quotation reference
- approved Added-at-Site pricing references (entered by coordinator after approval)

H2. Finance Updates JO

Finance enters:

- invoice number
- invoice amount

System sets JO status to **Invoiced**.

Key Design Principles

- **Offline-first with controlled sync**
- **Preloaded execution instances** reduce field friction and prevent scope hiding

- **No price visibility to inspectors**
- **No overwrites: only versioning and deltas**
- **Sticker inventory is controlled and auditable** (Reserved → Used)
- **FIR is enforceable evidence** via signature or client-absent email acceptance
- **Letterhead number control is traceable** and produces final archival copy
- **Publishing rules reflect pass/fail requirements**

I . Checklist Quick-Completion Option ("All OK" Function)

Purpose

Reduce inspection execution time and inspector exposure in harsh environmental conditions by allowing rapid completion of technical inspection checkpoints **where risk and complexity permit**, without compromising mandatory equipment identification data or traceability.

Scope Limitation (Non-Negotiable Rule)

This function applies **only to technical inspection checkpoints**.

It **does NOT apply to**:

- Mandatory equipment identification information
- Equipment data capture (manufacturer, serial, capacity, etc.)
- Evidence capture requirements (photos, readings, notes)
- Any checklist item marked as mandatory by policy

Mandatory equipment information must **always** be completed manually or loaded from previous record using previous sticker no.

Function Description

For eligible equipment categories, the checklist UI shall include a dedicated action button:

"All OK"

This button appears:

- At the **end of the technical inspection checkpoints**
- Within the selected checklist level (Simplified / Expanded / Critical)

System Behavior (When "All OK" Is Selected)

Upon inspector action:

• All visible technical checklist items in the current checklist level are automatically set to:

- **Pass / OK**
- No defects recorded

• Optional fields (comments, numeric readings) remain blank unless required by policy

• Mandatory evidence rules still apply (e.g., required photos or readings must still be captured)

• The inspector must **explicitly confirm** the action via a confirmation prompt:

“Confirm that all technical inspection checkpoints have been verified and are compliant.”

Equipment Registry Control (Policy-Driven)

Availability of the **“All OK”** function is controlled at the **Equipment Registry level**.

Each equipment category/subtype includes a policy flag:

Allow Quick Checklist Completion (All OK): YES / NO

Rules:

- If **YES**:
  - “All OK” button is visible and enabled
- If **NO**:
  - “All OK” button is hidden
  - Inspector must manually complete each checklist item

Risk-Based Application Guidance (Design Intent)

Typically **enabled** for:

- Small tools
- Low-risk equipment
- Simple, repetitive inspections
- Visual-only inspection categories

Typically **disabled** for:

- Cranes
- Lifting equipment
- Pressure systems

- High-risk or regulated assets
- Equipment requiring detailed measurements or multiple evidence points

Audit & Traceability Rules

• System logs usage of the “All OK” function:

- Inspector name
- Date & time
- Equipment type
- Checklist level used

• Excessive or inappropriate use of this function can be reviewed via audit reports (optional KPI).

Fail-Safe Rule

If any checklist item within the selected level is marked as:

- Mandatory individual confirmation
- Mandatory numeric input
- Mandatory evidence

Then:

- That item is **excluded** from the “All OK” auto-completion
- Inspector must complete it manually before submission

<u>Workflow: Operator Certification Execution</u>

Purpose

Enable an **Inspector / Trainer (Assessor)** to complete **Operator Certification** within an existing Job Order (JO) using two execution modes:

- **On-Site** (face-to-face assessment)
- **Off-Site** (online assessment via secure link)

Certification consists of **two mandatory parts**:

1. **Proforma** – Operator identity, experience, previous training/certification
2. **Assessment** – Trade-specific questions (and practical confirmation)

Primary output:

✅**Wallet Card (Operator Card)**

 A4 Certificate issued only when required by client

General Rules (Applies to Both Modes)

- Operator Certification must exist in the JO
- Preloaded operator categories/slots come from JO
- Inspector must **review and finalize** every candidate
- No candidate becomes *Finalized* without inspector approval

A) On-Site Operator Certification

(Inspector & Operator Face-to-Face)

1. Select JO and Service

- Inspector opens JO (offline-capable)
- Selects **Operator Certification**
- Chooses mode: **On-Site**

2. Choose Candidate Slot (From JO)

System shows preloaded slots, e.g.:

- Mobile Crane Operator #1, #2

- Motor Grader Operator #1 …

Inspector actions:

- Selects an existing slot

  OR

- Adds **New Category / Slot** if site reality differs

Change handling:

- New slot marked **Added at Site**
- Pending coordinator approval
- Candidate data can be collected regardless

3. Identity & Photo Capture

Inspector must:

- Capture / upload Operator ID
- Capture / upload Operator photo
- Enter:
  - Operator name
  - ID number
  - Mandatory profile fields (template-driven)

Validation rules:

- ID number mandatory
- Minimum:
  - 1 ID image
  - 1 operator photo

4. Proforma (Part 1)

Inspector completes proforma based on operator answers:

- Years of experience
- Previous training
- Previous certifications:
  - Type
  - Issuer
  - Issue & expiry date

    - Upload previous certificate image (if exists)
- Other mandatory fields (template-driven)

5. Assessment (Part 2)

Inspector opens assessment template for selected category.

Completion modes:

- Operator answers directly, OR
- Inspector records verbal answers

Special control:

- Inspector may select **“All answers correct”**
- System prompts confirmation:

  > *“You confirm the operator has correctly answered all assessment questions.”*

6. Operator Signature & Inspector Outcome

- Capture **Operator digital signature** (mandatory)
- Inspector records:
    - Outcome: **Pass / Fail / Incomplete**
    - Inspector confirmation comments
    - Additional remarks (optional)

7. Repeat & Save

- Repeat steps for all operator slots
- Each completed candidate saved as:

  Completed Candidate Record

- Inspector may continue other JO services

B) Off-Site Operator Certification

(Operator Online, Inspector Not Present)

1. Select JO and Service

- Inspector opens JO
- Selects **Operator Certification**
- Chooses mode: **Off-Site**

2. Create Off-Site Candidate Invitation

Inspector enters:

- Operator name
- Operator ID number
- Operator category (from slot or selected)

System generates:

- Secure shareable link
- Password / OTP (configurable)
- Expiry window (default e.g. 4 hours)

Inspector shares link manually (WhatsApp/SMS).

3. Operator Login (Web)

Operator logs in using:

- ID number
- Password / OTP

Security controls:

- Rate-limited attempts
- Auto-lock after failed attempts (configurable)
- Session timeout (e.g. 2 hours)

4. Live Capture (Strict)

Operator must:

- Take **live selfie** (camera only)
- Take **live ID photo** (camera only)

Rules:

- No file upload allowed
- Basic image quality checks enforced

5. Proforma (Part 1)

Operator completes:

- Experience
- Training history
- Certification history
- Issue / expiry dates
- Mandatory fields from template

6. Assessment (Part 2)

Operator completes assessment questions.

7. Operator Signature & Submit

- Operator signs digitally
- Submits assessment

System:

- Marks candidate = **Submitted**
- Notifies inspector

8. Inspector Review & Final Outcome

Inspector reviews submission and records:

- Outcome: **Pass / Fail / Incomplete**
- Confirmation comments
- Additional remarks
- Confirms **Practical Assessment Done** (checkbox)

Only after this step does the candidate become **Finalized**.

9. Repeat

Inspector repeats for other off-site candidates.

Change Handling (Both Modes)

1. Extra Candidates / Category Mismatch

- Inspector can add new category/slot
- Marked **Added at Site**
- Pending coordinator approval
- Billing inclusion depends on approval

2. No-Show / Incomplete

Inspector marks slot as:

- No-show
- Not assessed
- Incomplete

This directly affects **actual performed quantity**.

Certificate & Wallet Card Issuance (Corrected Logic)

Default Rule

✅**Wallet Card is issued in ~98% of cases**

□ **A4 Certificate issued only if client requires**

Printing & Numbering Workflow (Aligned with Training)

1. Selection Before Completion

Before finalizing operator certification, inspector selects:

- ✅Issue Wallet Card only

  OR

- ✅Issue Wallet Card + A4 Certificate

2. Initial Generation (For Printing)

System generates:

- **Wallet Cards – without background**

- **A4 Certificates – without background** (only if selected)
- **Every Wallet Card and Certificate has a unique number**

2.1 Numbering Rule

Wallet cards and Certificates must be uniquely numbered.

- **Waalet card Series will be**

  JO number-01, 02, 03

  e.g 1900-01, 1900-02, 1900-03

- **Certificate No**

  In Assessment case, Certificate will be same as Wallert Card

Only for:

- Finalized
- Passed candidates

3. Physical Printing

Inspector / Relevant Document Controller:

- Prints wallet cards on **pre-numbered physical cards**
- Prints certificates on **pre-numbered certificate letterhead**

4. Number Entry

User enters:

- Wallet card number (printed on backside)
- Certificate paper number (front, if applicable)

5. Final Official Copies

System:

- Validates uniqueness
- Generates:
  - Final wallet card with background + card number
  - Final certificate with background + paper number

- Locks records
- Archives official copies

Required Data per Candidate (Developer Checklist)

- Mode: On-site / Off-site
- Operator category & slot
- Name & ID number
- Proforma data (template-driven)
- Assessment answers
- Attachments:
  - ID image(s)
  - Operator photo (on-site) OR live selfie (off-site)
  - Live ID capture (off-site)
- Operator signature
- Inspector outcome & comments
- Status:
  - Draft → Submitted → Reviewed → Finalized

Key Controls & Improvements

- Inspector **must finalize** every candidate
- Wallet card-first logic reflects real practice
- Printing separated from official record creation
- Fully aligned with Training & JO workflows
- Audit-ready and fraud-resistant

Workflow: Training Execution (Trainer)

Purpose

Enable trainers to:

- deliver training (on-site / off-site)
- capture trainee identity and attendance digitally
- conduct assessments digitally
- issue **training certificates AND wallet cards**
- close the training service under the Job Order
- trigger finance invoicing based on actual attendance

1. Preconditions

- Job Order exists
- Training service exists in the JO
- Trainer (or Inspector acting as Trainer) is assigned to the JO
- Training materials are available in the system

2. Trainer Prepares for Training

- Trainer opens **JO → Training**
- Trainer accesses training materials:
  - View-only
  - Offline-capable (securely cached)
  - Selects session type:
    - 1 hour / 4 hour / 6 hour
  - Can hide allowed slides (no content editing)
- Materials remain accessible from **JO Issued → JO Closed**

3. Start Training & Attendance (QR Stage 1)

Trainer clicks **"Start Training"**

System:

- Marks training status = *In Progress*
- Generates **Attendance QR (QR Stage 1)**
- QR is time-bound (e.g., 30 minutes)

Trainee Action (Attendance QR)

Each trainee scans the QR and completes:

- Live selfie (camera only)
- ID photo (camera or upload – configurable)
- Name
- ID number
- WhatsApp number

System:

- Records attendance timestamp
- Marks trainee as **Present**
- Links trainee to training session
- Attendance QR expires automatically

4. Training Delivery

- Trainer delivers training content
- No system interaction required during delivery

5. Start Assessment (QR Stage 2)

Trainer clicks **"Start Assessment"**

System:

- Generates **Assessment QR (QR Stage 2)** (separate from attendance QR)
- QR is time-bound (trainer-controlled)

Trainee Action (Assessment QR)

- Trainee scans Assessment QR
- System validates:
    - Attendance already completed
    - If not → trainee is redirected to attendance
- Assessment opens on trainee device

6. Assessment Completion

Assessment includes:

- Trade-specific questions
- Auto-marking by system

- Score calculation
- Pass / fail criteria

Trainee:

- Completes assessment
- Signs digitally on device
- Submits

System:

- Saves responses
- Locks attempt
- Computes final result

7. Trainer Review & Resit (If Required)

Trainer views live summary:

- Attended vs absent
- Completed vs pending
- Scores and pass/fail results

If resit is required:

- Trainer generates **Resit Link with OTP**
- Link sent via WhatsApp
- Trainee logs in using ID + OTP
- Reattempts assessment remotely

System:

- Stores attempt history
- Keeps **final result** as authoritative

8. Complete Training (Mandatory Controls)

Before completing training, trainer must:

- Upload **signed physical attendance sheet** (mandatory backup evidence)
- Set **certificate validity period**
- Confirm outputs to be issued:
  - ✅A4 Training Certificate

    - ✅Wallet Card (Training / Operator Card)
    - *(In practice, almost always both)*

Trainer clicks **“Complete Training”**

System:

- Locks attendance & assessment data
- Calculates **actual participants**
- Marks training status = *Completed*

9. Certificate & Wallet Card Generation (Initial – For Printing)

System generates:

- **A4 Training Certificates – without background**
    - **Wallet Cards – without background**
    - Front & back layout applied
    - Wallet card number placeholder on backside

Generated **only for**:

- Attended trainees
- Passed trainees (if assessment is required)

These files are **print-ready drafts**.

9.1 Numbering Rule

Wallet cards and Certificates must be uniquely numbered.

- **Certificate No**

  TUVINSP-TRG-JO Number – 01 e.g TUVINSP-TRG-1900-01

  TUVINSP-TRG-JO Number – 02

  TUVINSP-TRG-JO Number – 03

  TUVINSP-TRG-JO Number – 04

- **Waalet card Series will be**

  JO number-01, 02, 03

e.g 1900-01, 1900-02, 1900-03

10. Physical Printing & Number Assignment

Trainer or authorized Document Controller:

- Prints:
    - Certificates on **pre-numbered certificate letterhead**
    - Wallet cards on **pre-numbered physical wallet cards**

After printing, user enters into system:

- Certificate letterhead paper numbers (front)
- Wallet card numbers (printed on backside)

11. Final Certificate & Wallet Card Generation (Official Copies)

System:

- Validates uniqueness of all numbers
- Generates:
    - **Final A4 certificate with background + paper number**
    - **Final wallet card with background + wallet card number**
- These versions become:
    - Official
    - Archived
    - Non-editable

12. Publish to Client

Trainer / Document Controller / Coordinator:

- Publishes certificates and wallet cards

Client can:

- Access via client portal
- Use shareable links
- Download copies

13. Submit Job Order (Training)

Trainer submits JO after:

- Training completed
- Certificates issued
- Wallet cards issued

System:

- Locks training records
- Sends **training execution summary** to Finance
- Finance invoices based on **actual attendance**

14. Finance Handling for Training Workflow

14. Training Job Order Handoff to Finance

Trigger

When trainer submits the Job Order (Training):

System automatically:

- Marks **Training Service = Finance-Ready**
- Sends notification to Finance
- Pushes training data into Finance Queue

15. Training Billing Snapshot (System-Generated)

System creates a **read-only Billing Snapshot** for Finance using:

Inputs

- Accepted quotation (training line items & unit prices)
- JO planned quantities
- **Actual attendance count**
- Number of:
  - Training certificates issued
  - Wallet cards issued
- Any approved site changes (if applicable)

Billing Snapshot Includes

- Training title
- Client & project
- Planned participants (from JO)
- Actual participants (from attendance)
- Unit price (from quotation)
- Line totals
- VAT %
- Subtotal, VAT amount, grand total

Finance can edit quantities or prices

16. Finance Review (Validation Only)

Finance reviews:

- Attendance vs billed quantity
- Certificate & wallet card issuance
- VAT and totals

Finance may:

- Add internal remarks
- Flag discrepancies to Coordinator

17. Invoice Generation (Training)

17.1. Finance Updates JO

Finance enters:

- invoice number
- invoice amount

System sets JO status to **Invoiced**.

Workflow: Certificate Format Authoring (Quality-Controlled)

Purpose

Enable the **Quality Department** to design, control, and maintain **inspection/training certificate formats** that are:

- standardized
- compliant with standards
- automatically populated by the system
- version-controlled and audit-ready

Certificates authored here are later **used automatically** during execution workflows.

1. Ownership & Roles

Owners

- Quality Manager
- Quality Executive
- Management Representative (MR)

Permissions

- Create new certificate formats
- Edit drafts
- Approve and publish formats
- Retire old formats

Inspectors, trainers, coordinators:

- **No access** to authoring
- Use published formats only

2. Create New Certificate Format

Quality user clicks **“Create Certificate Format”**

Mandatory Metadata

- Certificate name

(e.g., “Lifting Equipment Inspection Certificate”)

- Certificate type:
    - Inspection
    - NDT
    - Training
    - Operator Certification
- Applicable equipment type(s) or training type(s)
- Language (if multilingual)
- Effective date

3. Certificate Template Structure

Certificate format consists of **structured sections**, not free text.

3.1 Header Section

Quality defines:

- Company name & logo
- Certificate title
- Certificate number placeholder
- Accreditation logos (if applicable)

3.2 Equipment / Training Information Section

Fields mapped from system data:

- Equipment name
- Client name
- Project / site
- Equipment identification (serial, model, capacity, etc.)
- Inspection date
- Validity period

These fields are **locked mappings**, not editable by inspectors.

3.3 Standards & References Section (Auto-Populated)

Quality links:

- Inspection standard(s)

System automatically pulls:

- Correct references from **Equipment Registry**
- Displays them on certificate

Inspector cannot alter these references.

3.4 Results Section

Quality defines layout for:

- Pass / Fail status
- Limitations or remarks
- Summary statements

Content is populated automatically from execution data.

3.5 Signatures & Authorization

Quality defines:

- Signature blocks:
  - Inspector
  - Technical Manager / Approver
- Signature order (if approval required)
- Designation text

Signatures are applied digitally by the system.

3.6 Footer & Legal Text

Quality adds:

- Mandatory legal clauses
- Disclaimer text
- QR / verification statement
- Page numbering

4. Field Mapping (Critical Step)

Quality maps each certificate field to:

- System data source
- Checklist result
- Equipment registry field

This ensures:

- No manual typing
- No missing data
- Full consistency

5. Preview & Validation

Before publishing, Quality can:

- Preview certificate using sample data
- Validate:
    - All mandatory fields are mapped
    - No unresolved placeholders
    - Layout correctness

System blocks publishing if required fields are missing.

6. Approval & Publishing

Certificate format lifecycle:

- Draft
- Approved
- Published
- Retired

Only **Published** formats:

- Are selectable by the system
- Can be used for certificate generation

Publishing requires:

- Approval by Quality Manager or MR (configurable)

7. Version Control

Any change creates:

- New version number
- New effective date

Rules:

- Old versions remain available for:
  - Historical certificates
  - Audit traceability
- New inspections use **latest published version**

No overwriting allowed.

8. Certificate Numbering Placeholders

Quality defines:

- Certificate number format placeholder
  - e.g., TUVINSP-YYYY-XXXX
- Numbering is not sequential and not guessable

Format authoring **does not consume numbers**.

9. Background vs No-Background Handling

Quality defines:

- Background design (letterhead)
- System supports:
  - No-background version (for printing)
  - Final background version (archival)

Mapping is handled automatically.

10. Retirement of Certificate Formats

Quality may retire formats when:

- Standards change
- Accreditation scope changes

Retired formats:

- Cannot be used for new certificates
- Remain visible for old records

Key Design Principles

- Certificate formats are **controlled documents**
- Inspectors never edit certificates
- All data is system-generated
- Every certificate is traceable to:
    - Format version
    - Checklist
    - Equipment registry
    - Approval decision

Workflow: Finance & Invoicing

Purpose

Enable the Finance Department to:

- receive completed Job Orders
- invoice based on actual executed quantities
- maintain financial traceability
- prevent billing errors and disputes

Finance does not control execution, only billing.

1. Entry Condition (Trigger)

A Job Order becomes Finance-Ready when:

- All assigned services (inspection / training / operator certification, etc.) are submitted
- Certificates (if applicable) are issued
- Actual executed quantities are finalized

System action:

- Automatically notifies Finance
- Makes JO visible in Finance Queue

2. Finance Queue (Job Order List)

Finance users see:

- JO number
- Attached Approval e.g PO
- Client
- Project / site
- Service summary
- Execution date(s)
- Status: Pending Invoice

Finance cannot see:

- Checklists
- Inspection evidence
- Assessment details

3. Billing Snapshot Creation (System-Generated)

System creates a Billing Snapshot per JO using:

- Accepted quotation (original prices)
- Approved changes made during JO creation
- Approved additional items added at site
- Actual executed quantities (not planned quantities)

Billing Snapshot contains:

- Service item
- Unit price (from quotation)
- Actual quantity
- Line total
- VAT %
- Subtotal, VAT amount, grand total

This snapshot is read-only for Finance.

4. Finance Review (Validation Only)

Finance reviews:

- Quantities
- Services included
- VAT %
- Totals

Finance may:

- Add internal notes
- Flag discrepancies (non-editing)

Finance may NOT:

- Change quantities
- Change prices
- Change VAT rules

Any discrepancy must be escalated to Coordinator.

1. Invoice Generation

   Fiance will generate the invoice in Another Zatca approvaed software and then enter the detaiks of Invoice number and Invoice amount againts the JO.

Finance enters:

- Invoice number
- Invoice date
- Amount
- Due date

System updates:

- JO status → Invoiced
- Link invoice no to JO
- Make sure invoice no. is not repeated. And if repeated, notification sent to Admin
- Make sure should not be difefrence of more than 15 SAR between the calculated invoice amount and the amount entered by finance dept. If theres any difference, notofication sent to admin.
- Any closed JO must be invoiced with 24 hours. Any delays must be notification to admin.

8. Post-Invoicing Adjustments (Controlled)

If correction is needed:

- Original invoice is not edited
- Credit note or revised invoice is created (future phase)

9. Reporting & Audit

Finance can view/export:

- Invoices by date/client
- Revenue by service type
- JO vs Invoice reconciliation
- Client Satatement of Account

Key Rules (Very Important)

- Finance does not influence execution
- Billing is based on actual performed work
- No manual line-item edits
- Every invoice ties back to:
  - Job Order
  - Quotation
  - Execution records

Outputs

- Billing snapshot
- JO status updated

Workflow: Certificate Letterhead & Wallet Card Stock & Numbering Control

Purpose

Ensure **strict control, traceability, and accountability** over controlled stationery, including:

- **A4 Inspection & Testing Certificate Letterheads** (pre-numbered)
- **A4 Training Certificate Letterheads** (pre-numbered)
- **Wallet Cards** (front/back printed, pre-numbered)

So that:

- no certificates or cards are issued without system records
- misuse, loss, or leakage is detectable
- every issued number is traceable to:
  - person
  - service
  - Job Order
- ISO/IEC 17020 best practices are satisfied

1. Stock Types Covered (Clear Separation)

1.1 Inspection & Testing Certificate Letterheads (A4)

- Pre-printed paper with:
  - **Unique paper number (front side)**
- Used for:
  - Inspection certificates
  - Testing / NDT reports

1.2 Training Certificate Letterheads (A4)

- Pre-printed paper with:
  - **Unique paper number (front side)**
- Used for:
  - Training certificates
  - Operator certificates (only when client requires A4 certificate)

 This is a **separate stock category** from inspection/testing certificates.

1.3 Wallet Cards

- Pre-printed plastic cards
- Front:
  - Card design / branding
- Back:
  - **Unique wallet card number**
- Used for:
  - Training cards
  - Operator cards (default output)

2. Stock Registration (Stock Entry)

Action: Register New Stock

Performed by **Admin / Coordinator / Quality** (role-configurable).

2.1 Inspection & Testing Certificate Letterheads

User enters:

- Stock category: *Inspection/Test Certificate Letterhead*
- Series start number
- Series end number
- Supplier / printing batch reference
- Date received

2.2 Training Certificate Letterheads

User enters:

- Stock category: *Training Certificate Letterhead*
- Series start number
- Series end number
- Supplier / printing batch reference
- Date received

2.3 Wallet Cards

User enters:

- Stock category: *Wallet Card*
- Series start number
- Series end number

- Card type:
  - Training
  - Operator
  - Generic (if applicable)
- Supplier / printing batch reference
- Date received

System Behavior

For each number in the series:

- Creates **individual stock records**
- Initial status = **In Stock**

 No number can be used unless registered in the system.

3. Stock Bundling (Optional but Recommended)

To simplify handling:

- Stock can be grouped into **bundles**, e.g.:
  - Inspection certificate papers: 100–199
  - Training certificate papers: 300–399
  - Wallet cards: 5001–5100

Each bundle contains:

- Bundle ID
- Stock category
- Number range
- Status

4. Issuing Stock to Users (Critical Control)

Who Can Receive Stock

- Inspectors
- Trainers
- Document Controllers

Issuance Process

Coordinator assigns:

- Stock category
- Bundle or number range
- Recipient (user)

System records:

- Issued to (user)
- Issue date
- Issued by
- Number range

Stock status changes:

- **In Stock → Issued**

Accountability & Dashboard Visibility (Improvement Added)

Once stock is issued:

- The recipient's **dashboard is updated immediately**
- User sees a dedicated **"My Stock"** section containing **three separate tables**:
    1. Inspection/Test Certificate Letterheads
    2. Training Certificate Letterheads
    3. Wallet Cards

Each table shows:

- Numbers issued
- Numbers used
- Numbers remaining
- Numbers marked lost/damaged

The recipient is **fully accountable** for issued stock.

5. Stock Usage During Certificate / Card Issuance

Usage Point

Occurs during:

- Inspection certificate issuance
- Training completion

- Operator certification completion

User Action

User enters:

- Certificate paper number (front side), OR
- Wallet card number (back side)

System Validation (Hard Rules)

System validates:

- Number exists
- Number is issued to that user
- Number has not been used
- Correct stock category for that service

If valid:

- Status → **Used**
- Number linked to:
  - Candidate / equipment
  - Certificate or wallet card
  - Job Order
  - Service type

If invalid:

- System **blocks completion**

6. Automatic Number-to-Record Mapping

System maintains **immutable mapping tables**:

Inspection / Training Certificate Mapping

| Paper No | Certificate Type | JO | Candidate / Equipment | Issued By | Date |

Wallet Card Mapping

| Card No | Card Type | JO | Candidate | Issued By | Date |

These tables are:

- Read-only
- Audit-safe
- Non-editable

7. Unused, Missing & Risk Detection

Automatic Monitoring

System flags:

- Issued numbers never used
- Long gaps in numbering
- Numbers issued long ago but unused
- High wastage or loss by a user

Risk Indicators

- Frequent unused stock
- Repeated lost/damaged reports
- Mismatch between:
    - attendance
    - finalized candidates
    - issued certificates/cards

8. Lost / Damaged Stock Handling

User Action

If paper/card is:

- Lost
- Damaged
- Misprinted

User must:

- Mark number as **Lost / Damaged**
- Provide mandatory reason

System:

- Changes status → **Invalid**
- Prevents reuse
- Logs permanently

9. Stock Request & Replenishment

User View

Users can view:

- Issued stock
- Used numbers
- Remaining balance (per category)

Users may:

- Request additional stock via system

System Alerts

System monitors:

- Low stock thresholds (per category)

Alerts:

- Notify coordinator
- Prompt reorder from printing facility

10. Audit & Management Reports

Reports include:

- Stock issued vs used per user
- Unused numbers by age
- Lost/damaged numbers
- Certificates/cards issued per JO
- Full traceability:
    - Stock → User → Certificate/Card → JO → Client

Key Control Principles

- Certificate letterheads & wallet cards are **controlled assets**
- One number = one issued document/card
- No manual override
- No deletion
- Full lifecycle tracking

HR Module / Workflow

(Human Resources, Competence & Staff Records – Final Version)

Purpose

Provide a **central, controlled HR system** to manage:

- staff identity & employment records
- competence, authorization & training
- legal & access-related documentation
- controlled sharing of staff profiles with clients

This module supports **ISO/IEC 17020 competence requirements** and **real operational needs** such as site access approvals.

1. Staff Master Registry (Core)

Staff Master Table (Dashboard View)

Visible to authorized users (Management, HR, Quality).

Each staff record includes:

- Employee ID (system-generated)
- Full name
- Designation / role
- Department
- Date of joining
- Total industry experience (years)
- Key qualification
- Employment status:
    - Active / On Leave / Suspended / Resigned
- Authorization status:
    - Authorized / Restricted / Not Authorized
- Last competence review date

Table is:

- Searchable
- Filterable
- Exportable (audit use)
- Configurable

2. Roles & Designations (Configurable)

Examples:

- CEO / GM
- Technical Manager
- Admin
- Coordinator
- Document Controller
- Senior Inspection Engineer
- Inspection Team Lead
- Inspection Engineer / Technician
- Training Manager
- Trainer
- NDT Manager / Technician
- Other approved designations

A staff member may hold **multiple roles** (e.g., Inspector + Trainer).

3. Personal & Employment Information

Personal Details

- Full legal name
- Date of birth
- Nationality
- Home country address & contact
- Saudi personal contact number
- Official contact number
- Personal email
- Official company email

Employment Details

- Date of joining
- Employment type (Permanent / Contract / Consultant)
- Department
- Reporting manager
- Work region / location

4. Legal, Identity & Access Documents (Expanded)

4.1 Core Legal Documents

Stored securely with expiry tracking:

- Passport
- Visa
- Iqama / National ID
- Work permit (if applicable)

4.2 Driving & Vehicle Documents (Access Pass Support)

Used for **site access approvals**.

Documents include:

- Driving License
- Vehicle Registration (Istimara)
- Vehicle Insurance

Each document has:

- Issue date
- Expiry date
- Uploaded file
- Auto-expiry alerts

4.3 Mukim Document (Saudi Compliance)

- Mukim paper (generated from Saudi government system)
- Validity: **typically 1 month**
- Stored as:
  - Mukim – YYYY-MM
- System supports:
  - Frequent updates
  - Expiry reminders
  - Historical retention

5. CV, Qualifications & Professional Records

Stored per staff:

- Curriculum Vitae (CV)

- Academic certificates
- Professional certifications
- Trade licenses
- Third-party approvals

Each record includes:

- Issuing authority
- Issue date
- Expiry date (if applicable)
- Status: Valid / Expired

6. Job Offer, Contract & JD Records

- Job offer letter
- Offer acceptance
- Employment contract
- Contract amendments
- Signed Job Description (JD)

All documents:

- Version-controlled
- Non-deletable
- Superseded records retained

7. Competence & Authorization Management

Competence Areas

Tracked per staff:

- Inspection categories
- Equipment types
- Training delivery
- Operator assessment
- NDT methods

Authorization Records

For each competence:

- Authorized role
- Scope

- Start date
- Expiry / review date
- Approved by (e.g., Technical Manager)

System enforcement:

- Only authorized staff can be assigned in Job Orders
- Expired authorization blocks assignment automatically

8. Training Records

Includes:

- Training title
- Internal / External
- Provider
- Dates
- Certificate upload
- Validity (if applicable)

Feeds into:

- Training Matrix
- Authorization review

9. Training Matrix

Maps:

- Staff × required competence × training status

Used by:

- Quality
- Technical Manager
- Auditors

10. Training Plan & Calendar

- Annual / periodic training plan
- Refresher intervals
- Target staff
- Planned vs completed tracking

- Central training calendar

11. Staff Monitoring & Performance Records

Includes:

- Field witnessing
- Supervision records
- Technical reviews
- Performance evaluations

Each record stores:

- Date
- Observer
- Findings
- Actions required

12. Shareable Staff Profile Links (New – Very Important)

Purpose

Allow controlled sharing of **staff competence evidence** with clients **without exporting PDFs**.

Shareable Profile Contents

Coordinator / Quality can select one or more staff and generate a **secure shareable link** containing:

- Staff name & designation
- CV
- Academic qualifications
- Professional certifications
- Training records

❌Does NOT include:

- Passport
- Visa
- Iqama
- Personal contact details
- Salary or HR-only documents

Link Controls

- Time-limited expiry
- Optional password protection
- View-only
- Access logged (who viewed, when)

Used for:

- Client approval
- Pre-qualification
- Audit submissions

13. Staff Status & Lifecycle Management

Supports:

- Promotion
- Role change
- Suspension
- Resignation

All changes:

- Logged
- Date-effective
- Historical data preserved

14. Access Control & Confidentiality

- Role-based access
- HR-only documents restricted
- Legal & Mukim docs limited to HR/Admin
- Shareable links expose **only approved data**

All access is:

- Logged
- Auditable

15. Audit & Reporting

Supports reports for:

- Staff competence lists
- Authorization scope
- Expired documents
- Mukim validity
- Training compliance
- ISO/IEC 17020 audits

Key Design Principles

- One staff = one master record
- No deletion (only superseding)
- Full versioning
- Authorization controls system behavior
- Share externally without exporting files

Workflow: Inspection Tools, Instruments & Assets Registry

(Tools Usage Log + Calibration Control + Asset Accountability)

Purpose

Establish a **controlled, traceable system** for managing:

• inspection tools & measuring instruments

• testing instruments

• shared and non-shared tools

• company assets (vehicles, IT, kits, equipment)

• calibration compliance

• usage logging (ISO/IEC 17020 requirement)

So that:

• every inspection/test records **which tools were used**

• every tool has a **responsible owner/user**

• expired or uncalibrated tools **cannot be used**

• shared tools are properly issued and returned

• assets are always traceable to a person/location

This module supports:

• Inspection workflow

• Testing workflow

• HR module (staff accountability)

• Audit & accreditation requirements

Module Structure (High-Level)

This module has **two tightly related parts**:

1. **Inspection Tools & Instruments Registry**
2. **Company Assets Registry**

Both share:

• issuance logic

• responsibility tracking

• audit logs

PART 1: Inspection Tools & Instruments Registry

1. Ownership & Roles

Registry Owner

• Quality Department (preferred) or Admin (configurable) or Coordinator

Roles & Permissions

• Admin / Quality:

- create tools
- edit tool records
- upload calibration certificates
- assign/unassign tools

  • Coordinators:

- issue shared tools
- view usage logs

  • Inspectors:

- view tools issued to them
- select tools during execution
- cannot edit tool master data

2. Tool / Instrument Master Record

Each tool or instrument is registered **once**.

Mandatory Fields

• Tool name

(e.g., Vernier Caliper, Measuring Tape, Torque Wrench)

• Tool category

(Measuring / Electrical / Mechanical / NDT / Other)

• Tool type

(Hand tool / Measuring instrument / Electronic instrument)

• Manufacturer

• Model

• Serial number / Asset number

• Calibration required? (Yes / No)

Calibration Fields (If Applicable)

• Calibration certificate upload (PDF/image)

• Last calibration date

• Next calibration due date

• Calibration agency

• Calibration status (Valid / Expired / Suspended)

Rule

Any tool with:

• calibration required = Yes AND

• calibration expired

→ is **automatically blocked from field use**

3. Tool Assignment Types

The system supports **two assignment models**, exactly as you described.

3.1 Permanently Assigned Tools (Default for Inspectors)

Use case

• Frequently used tools

• Each inspector has a dedicated set

Workflow

• Admin/Coordinator assigns tools permanently to an inspector

• Tool status = Issued (Permanent)

• Inspector dashboard shows:

- "My Tools"
- only valid (calibrated) tools

Field Impact

• When inspector opens a Job Order:

- his pre-assigned tools appear automatically
- he simply clicks/selects tools used

  • No searching, no manual entry

3.2 Shared / Temporarily Issued Tools

Use case

• Limited-quantity tools

• Specialized equipment

• High-value instruments

Workflow

• Tool remains with Coordinator / Store

• When required:

- Coordinator issues tool to inspector

- Issue duration may be defined (optional)
    - Tool status = Issued (Temporary)

Inspector View

• Tool appears in inspector’s available tools list

• Only for the issuance period

Return

• Coordinator marks tool as Returned

• Tool status reverts to In Store / Available

4. Tool Availability Rules (Critical Control)

A tool appears in an inspector’s Job Order **only if**:

• issued to that inspector (permanent or temporary)

• calibration status = Valid

• tool status ≠ Lost / Damaged / Suspended

If any condition fails:

• tool is hidden from Job Order execution UI

5. Tool Selection During Inspection / Testing

During Job Order execution:

• Inspector opens service line item

• “Tools Used” section is shown

• Inspector selects tool(s) used from his available list

System records:

• tool ID

• tool name

• inspector

• JO number

• service type

• date & time

This data automatically becomes part of:

• inspection record

• FIR

• audit trail

6. Automatic Tool Usage Log (ISO/IEC 17020 Core Requirement)

The system automatically generates a **Tool Usage Log**.

Each log entry contains:

• Tool ID / serial number

• Tool name

• Inspector name

• Job Order number

• Service performed

• Date & time used

No manual log entry is allowed.

Usage is recorded **only** via actual execution.

7. Calibration Control & Alerts

System Monitoring

• Tracks calibration expiry continuously

Before Expiry

• Alerts Quality / Admin

• Optional alert to inspector

After Expiry

• Tool is:

- automatically blocked
- removed from inspector's usable list

    • Cannot be selected in any Job Order

Audit Benefit

• Proves no expired instrument was used in inspection/testing

8. Tool Loss / Damage Handling

If a tool is:

• lost

• damaged

• sent for repair

User must:

• mark tool as Lost / Damaged / Under Repair

• enter reason (mandatory)

System:

• blocks tool from use

• logs event permanently

PART 2: Company Assets Registry

9. Asset Scope

This registry covers **all non-consumable company assets**, including:

• vehicles

• laptops / desktops

• printers / screens

• rescue kits

• demonstration kits

• measuring guns

• furniture

• any other capital or controlled asset

10. Asset Master Record

Each asset includes:

• Asset name

• Asset category

(Vehicle / IT / Equipment / Furniture / Safety / Other)

• Asset tag / number

• Manufacturer / make / model

• Serial number (if applicable)

• Purchase date

• Asset condition

• Location

• Responsible person

11. Asset Assignment & Responsibility

Assets can be:

• Assigned to a person

• Assigned to a department

• Assigned to a location

System records:

• issued to

• issue date

• current location

• accountability owner

This supports:

• HR responsibility

• insurance

• internal controls

12. Asset Movement & History

Whenever an asset is:

• reassigned

• relocated

• returned

System logs:

• previous holder/location

• new holder/location

• date & reason

No deletion allowed.

13. Asset Visibility in Inspector Context

• Assets **do not appear** in inspection tool selection

• Assets are managed for accountability, not inspection execution

• Vehicles may optionally link to Job Orders for travel records (future extension)

14. Dashboards

Inspector Dashboard

• My Tools (usable)

• Calibration status

• Recently used tools

Coordinator / Quality Dashboard

• Tools by inspector

• Calibration due / expired

• Tool usage frequency

• Shared tool availability

Asset Dashboard

• Assets by location

• Assets by responsible person

• Lost / damaged assets

15. Audit & Compliance Outputs

System can generate:

• Tool usage logs per inspector

• Tool usage logs per Job Order

• Calibration compliance reports

• Asset responsibility reports

• Lost/damaged tool history

Key Control Principles (Non-Negotiable)

• Tools are controlled instruments

• Usage is recorded only via execution

• Expired tools cannot be used

• Inspectors cannot fake tool usage

• Every tool has a responsible owner

• Fully aligned with ISO/IEC 17020