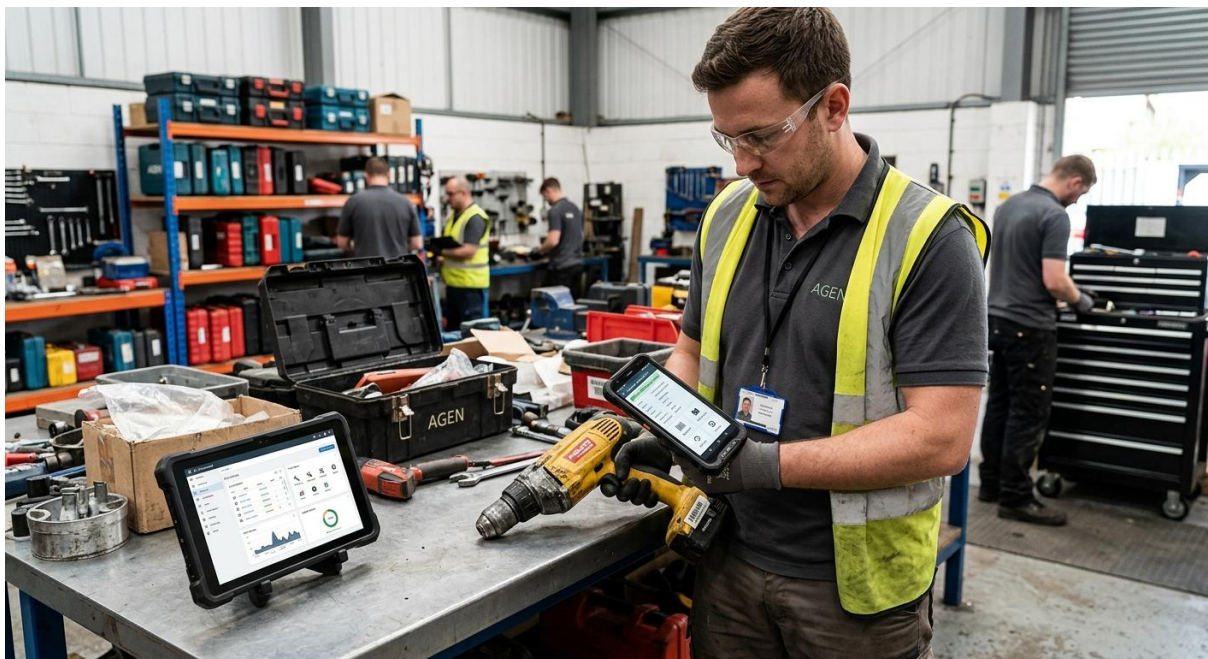


Introduction

AGen Tools Tracking & Management System is a digital solution designed to provide full visibility and control over company-owned tools used by engineers, technicians, and service personnel. The system combines PC and Mobile applications with barcode identification technology to track tool ownership, location, usage, borrowing history, stock status, and lifecycle management.

This solution minimizes tool loss, improves engineer productivity, reduces replacement costs, and provides management with real-time reports on tool utilization and asset availability.



Business Challenges

Many service departments and factories face the following challenges:

Missing or misplaced tools

Difficulty locating tools quickly

No record of who borrowed a tool

Tools not returned on time

Inability to track project-specific tool usage

Lack of visibility on tool inventory value

Time-consuming stock-taking processes

No proper write-off or disposal records

Manual spreadsheet tracking prone to errors



Proposed Solution

Implement a centralized Tools Tracking Management System accessible via:

PC Application

Administration and reporting

Tools registration

Tools management

Dashboard monitoring

Mobile Application

Barcode scanning

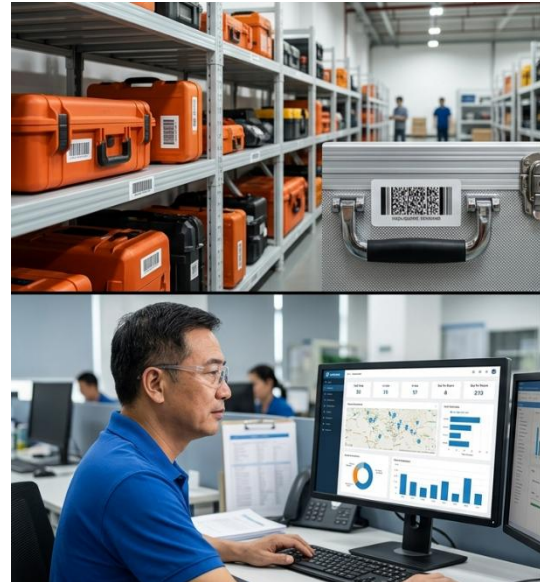
Tool check-in/check-out

Tool searching

Tool Stock taking

Real-time updates

Barcode Identification



Every tool will be assigned with a unique barcode label.

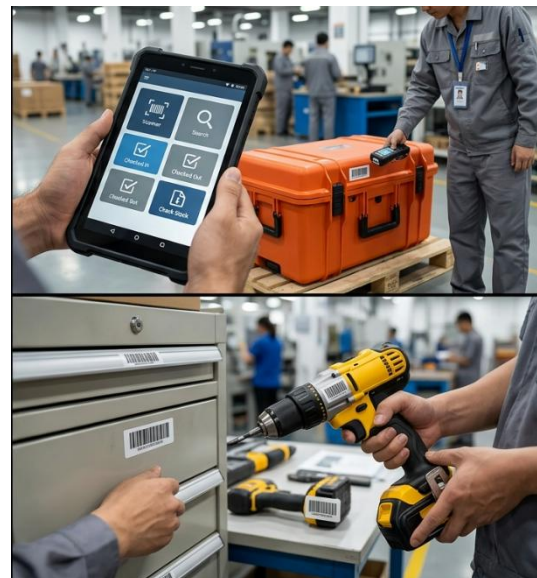
Example:

TL-000001

TL-000002

TL-000003

Users can scan the barcode using a mobile device to retrieve complete tool information instantly.



System Modules

Module 1 – Tool Master Management

Function - Maintain all tool information:

Information Captured (May increase or decrease base on customer requirement)

Tool ID (Must)

Tool Name (Must)

Tool Category

Tool Brand

Model Number

Serial Number

Purchase Date

Purchase Price

Warranty Expiry Date

Tool Status

Storage Rack Location

Tool Image



Benefits

Centralized tool database

Full asset history

Easy search and filtering

Module 2 – Barcode Label Printing

Functions - Generate unique barcode for each tool

Print barcode labels

Reprint damaged labels

Supported Formats

Major 1D barcode like Code 128, code 39, etc

Common 2D Code QR Code, Datamatrix, pdf417

Benefits

Fast identification

Eliminate manual data entry

Improved tracking accuracy



Module 3 – Tool Availability Checking

Functions - View:

Available tools

Loaned-out tools

Under maintenance tools

Reserved tools

Mobile Search Example

Engineer scans or searches:

Torque Wrench



System displays:

Status: Available

Location: Rack B-03

Quantity: 1

Module 4 – Tool Location Tracking

Functions - Track storage location:

Building

Department

Room

Cabinet

Rack

Shelf



Example

Factory A

Store Room

Cabinet 3

Rack B

Shelf 02

Benefits

Faster retrieval

Reduced search time

Improved organization

Module 5 – Tool Loan & Return Management

Functions - Track:

Which engineer borrowed the tool

Loan date and time

Return date and time

Project or customer associated with usage

Sample Record

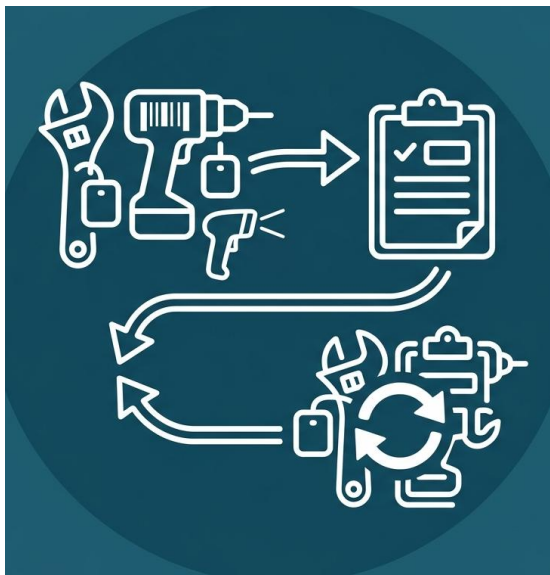
Item	Information
Tool	Thermal Camera
Borrower	John Tan
Department	Service
Project	Customer ABC Installation
Loan Date	10/10/2026
Return Date	12/10/2026

Benefits

Accountability

Preventing lost tools

Complete audit trail



Module 6 – Project Usage Tracking

Functions – Project Tracking

Associate tools with:

Projects

Service Jobs

Maintenance Activities

Customer Sites

Benefits

Management can determine:

Tool utilization by project

Cost allocation

Resource planning



Module 7 – Tool Cost & Asset Value Management

Functions - Cost

Store:

Purchase Price

Supplier

Purchase Order Number

Asset Value

Benefits

Asset valuation

Cost tracking

Budget planning

Replacement analysis



Module 8 – Stock Taking Module

Function - Mobile Scanning Stock Take

User scans tools are physically present.

System compares:

Expected quantity

Actual quantity

Reports

Missing tools

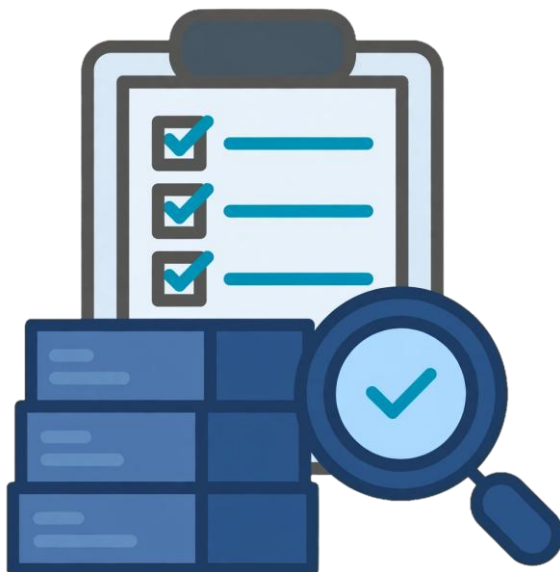
Unverified tools

Stock variance

Benefits

Faster audits

Improved inventory accuracy



Module 9 – Maintenance & Calibration Management (Optional)

Functions - Track:

Calibration due date

Maintenance schedule

Service history

Alerts

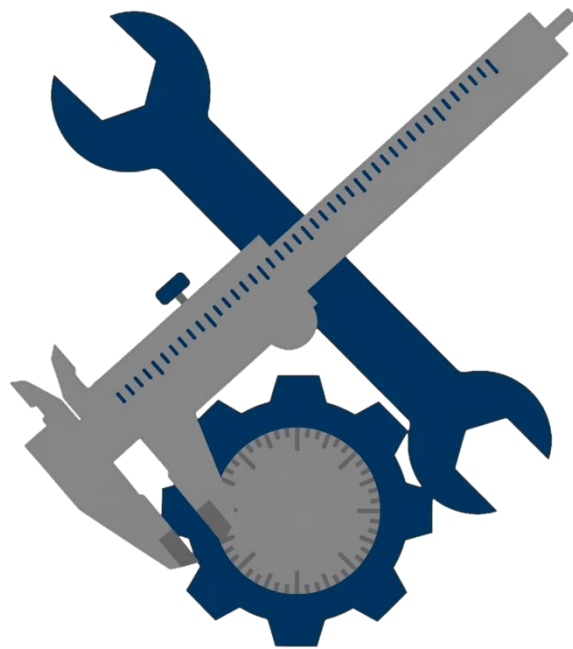
Calibration due

Maintenance overdue

Benefits

Compliance

Increased tool reliability



Module 10 – Write-Off & Disposal Management

Function – dispose tool

Write-Off Reasons

Lost

Damaged

Obsolete

Beyond repair

Approval Workflow

Raise write-off request

Manager approval

Asset disposal recording

Audit trail generation

Benefits

Governance compliance

Financial transparency



Module 11 – Dashboard & Analytics

Function - Dashboard Information

Total tools

Available tools

Tools on loan

Overdue tools

Missing tools

Asset value

Monthly borrowing trends

Benefits

Real-time visibility

Better decision making



Reports Available

Operational Reports

Tool Inventory Report Shows: Complete tool listing Status Location	Tool Availability Report Shows: Available tools Reserved tools Loaned tools
Loan Transaction Report Shows: Borrower Project Loan date Return date	Overdue Return Report Shows: Tools not returned on time Person responsible
Tool Usage by Project Report Shows: Project name Tools utilized Duration	



Mobile Application Features

Barcode Scanning

Tool Issue

Tool Return

Stock Take

Tool Search

Search Functions

Search by:

Tool Name

Tool ID

Barcode

Engineer

Project

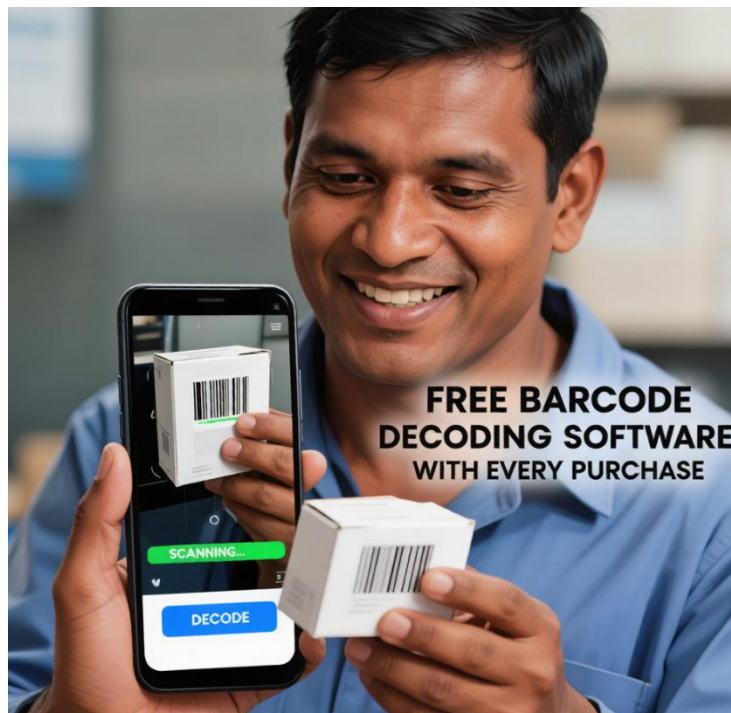
Dashboard Access

View:

Available inventory

Recent transactions

Overdue tools



Expected Business Benefits

Operational Benefits

- ✓ Reduce lost tools
- ✓ Faster tool retrieval
- ✓ Improved accountability
- ✓ Reduced downtime
- ✓ Real-time visibility

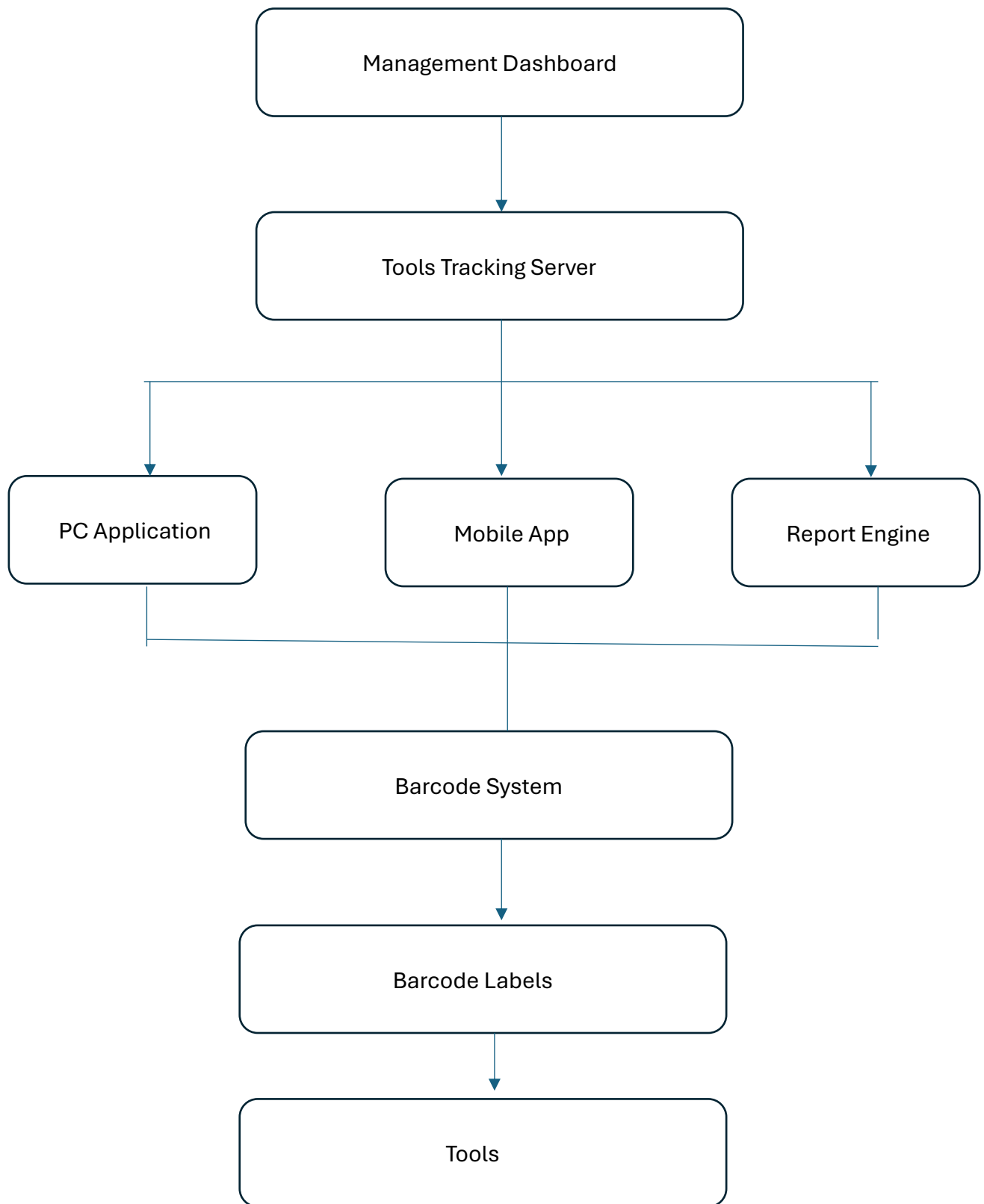
Financial Benefits

- ✓ Lower replacement costs
- ✓ Improved asset utilization
- ✓ Better purchasing decisions
- ✓ Accurate inventory valuation

Management Benefits

- ✓ Complete audit trail
- ✓ Better compliance
- ✓ Management reporting
- ✓ Data-driven decision making

Proposed System Architecture



Conclusion

The proposed AGen Tools Tracking & Management System provides end-to-end visibility of all tools within the service department and factory environment. Through barcode identification, mobile scanning, loan management, stock taking, and reporting capabilities, the organization can significantly reduce tool losses, improve operational efficiency, and maintain complete accountability for every tool throughout its lifecycle. This solution delivers a scalable foundation for future integration with RFID, maintenance management, and enterprise systems such as ERP or CMMS.

