**Axomate – Business & Functional Requirements**

v1.0

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# Business Requirements

* BR‑1 Efficiency & Duplication Control: Provide a streamlined invoice flow that prevents duplicate submissions by gating Save & Print behind a New Invoice action and disabling it after success.
* BR‑2 Accurate Mileage Tracking: Record mileage reliably with a 5‑hour update lock to avoid noise/duplicates and prevent regressive values.
* BR‑3 Inline Master Data Creation: Allow creating customers and vehicles directly from the invoice flow when they do not already exist.
* BR‑4 Consistent Pricing & Catalog Use: Support service catalog reuse, de‑duplicate identical custom items, and map custom line items to catalog entries to maintain pricing consistency.
* BR‑5 Professional Output: Generate a PDF invoice reflecting the exact data saved (same timestamp and mileage) for the customer.
* BR‑6 Auditability: Capture CreatedDate (UTC) and CreatedBy across persisted entities for traceability.
* BR‑7 Data Quality: Enforce unique identifiers (e.g., license plate, optional VIN uniqueness where applicable) and prevent negative or unrealistic values (e.g., mileage bounds).
* BR‑8 Usability: Use clear enable/disable states and actionable messages to guide users; minimize re‑entry when switching between customer/vehicle contexts.
* BR‑9 Performance & Stability: Keep operations responsive, set Busy state during long tasks, and guard against re‑entrant actions.

# Functional Requirements

FR‑1 Add New Customer:

* 1) Triggered by Add New Customer. System clears current selection, prepares an empty edit buffer, and enables Save New Customer.
* 2) Save New Customer is enabled only in this mode. On save: validate Name required; trim fields; insert via customer service (Id=0); refresh and select the saved record; disable mode.

FR‑2 Add New Vehicle:

* 1) Requires a selected/saved customer (Id>0). On trigger, clear selected vehicle, prepare blank form tied to customer, reset mileage, enable Save New Vehicle.
* 2) Save New Vehicle requires valid form: VIN OR License Plate OR (Make AND Model). On save: trim fields; insert; refresh/select saved; record mileage using FR‑4 (5‑hour rule); disable mode.

FR‑3 New Invoice → Save & Print:

* 1) Save & Print is disabled by default; enabled only after New Invoice is clicked. New Invoice clears line items, resets totals/mileage, sets date/time, and enables Save & Print.
* 2) On Save & Print: set Busy; require ≥1 line item with Price>0 & Qty>0; map custom items to catalog; create customer/vehicle if not yet saved using FR‑1/FR‑2 rules; record mileage per FR‑4; persist invoice; disable New Invoice mode to prevent duplicates; generate PDF with same timestamp and mileage; clear Busy.

FR‑4 Mileage Capture (5‑hour rule):

* 1) On typing: parse positive integer; call TryRecordMileageChangeAsync; if last record <5h, revert to latest persisted and show remaining time.
* 2) On prefill (vehicle/date change): fetch latest mileage for that day and set without recording (suppressed).
* 3) On save-time: insert mileage only if last record ≥5h at ServiceMomentNow; never allow regressive values.

FR‑5 Service Items Handling:

* 1) Prevent duplicate catalog items in the grid (except 'Other').
* 2) De‑duplicate custom items by normalized description + price@2dp.
* 3) When a custom item is not in catalog, create it and use the new Id for the invoice lines.

FR‑6 Persistence & Audit Fields:

* 1) On insert of Customer, Vehicle, ServiceItem, Invoice, InvoiceLineItem, MileageHistory (and applicable admin/company records), set CreatedDate (UTC) and CreatedBy (current user).
* 2) Invoice stores Mileage equal to the value used for mileage recording and PDF.

Note: In Word, press F9 or use References → Update Table to refresh the Index (TOC).