

# Requirements Traceability Matrix (RTM)

## Requirements Traceability Matrix (RTM): Bilko

“ **Project:** Bilko — Balkan Accounting SaaS **Version:** 0.1 **Date:** 2026-02-23  
**Author:** John (AI Director) **Status:** Draft **Reviewers:** Alem Bašić (CEO)

### Document History

Version	Date	Author	Changes
0.1	2026-02-23	John (AI Director)	Initial draft — Phase 1 Serbia MVP

## 1. Purpose of Traceability

The Requirements Traceability Matrix serves four functions for Bilko:

- Coverage Assurance** — Every business requirement (BR) has an implementation path (FR, US) and test cases (AC, TC)
- Change Impact** — When a regulatory requirement changes (e.g., SEF API update), quickly identify all affected code and tests
- Gap Detection** — Identify FRs with no tests (coverage gap) or tests with no requirement (potential scope creep)
- Compliance Audit** — Demonstrates to auditors that SEF, PDV, and accounting law requirements are implemented and verified

**Traceability Directions:**

- **Forward Traceability** — BR → FR → Code → Test (did we build what was required by law and stakeholders?)
- **Backward Traceability** — Test → Code → FR → BR (does everything we built have a legal or business justification?)

## 2. Document References

Document	Location	Version	Last Updated
Business Requirements Document (BRD)	<a href="#">BRD.md</a>	0.1	2026-02-23
Functional Requirements Spec (FRS)	<a href="#">FUNCTIONAL-REQUIREMENTS.md</a>	0.1	2026-02-23
Non-Functional Requirements	<a href="#">NON-FUNCTIONAL-REQUIREMENTS.md</a>	0.1	2026-02-23
User Stories	<a href="#">USER-STORIES.md</a>	0.1	2026-02-23
Acceptance Criteria	<a href="#">ACCEPTANCE-CRITERIA.md</a>	0.1	2026-02-23
Risk Register	<a href="#">../governance/RISK-REGISTER.md</a>	0.1	2026-02-23
Test Plan	<a href="#">../TEST-PLAN.md</a>	0.1	2026-02-23
Database Schema	<a href="#">../../packages/database/prisma/schema.schema.prisma</a>	Current	2026-02-20

## 3. Forward Traceability Matrix

### 3.1 Functional Requirements Traceability

BR ID	Business Requirement	FR ID	Functional Requirement	US ID	DB Model	Code Module	Unit Test	Integration Test	AC ID	Status
BR-001	SEF e-invoice submission	FR-010	Create Invoice	US-010	Invoice, InvoiceItem	<a href="#">apps/api/src/routes/invoices.ts</a>	<input type="checkbox"/>	<input type="checkbox"/>	AC-030	<input type="checkbox"/> Not Started
BR-001	SEF e-invoice submission	FR-011	SEF Submission	US-011	Invoice (sef_status, sef_id)	<a href="#">apps/api/src/services/sef.service.ts</a>	<input type="checkbox"/>	<input type="checkbox"/>	AC-050	<input type="checkbox"/> Not Started

BR ID	Business Requirement	FR ID	Functional Requirement	US ID	DB Model	Code Module	Unit Test	Integration Test	AC ID	Status
BR-001	SEF e-invoice submission	FR-012	Invoice Status Tracking	US-012	Invoice (status)	apps/api/src/routes/invoices.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-060	<input type="checkbox"/> Not Started
BR-002	PDV auto-calculation	FR-010	Create Invoice (PDV)	US-010	InvoiceItem (vat_amount)	apps/api/src/services/tax.service.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-030, AC-038	<input type="checkbox"/> Not Started
BR-002	PDV auto-calculation	FR-050	PDV Report	US-050	Invoice, Expense	apps/api/src/routes/reports.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-080, AC-083	<input type="checkbox"/> Not Started
BR-003	Double-entry bookkeeping	FR-031	Transaction Recording	US-031	Transaction	apps/api/src/services/accounting.service.ts	<input type="checkbox"/>	<input type="checkbox"/>	NF-AC-030	<input type="checkbox"/> Not Started
BR-004	Multi-currency	FR-070	Exchange Rate Management	US-070	Currency, ExchangeRate	apps/api/src/services/currency.service.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-032, NF-AC-032	<input type="checkbox"/> Not Started
BR-005	Bank statement import	FR-040	CSV Import	US-040	BankTransaction	apps/api/src/routes/banking.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-070 (extended)	<input type="checkbox"/> Not Started
BR-006	Financial reports	FR-060	P&L Statement	US-060	Transaction, Account	apps/api/src/routes/reports.ts	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/> Not Started
BR-006	Financial reports	FR-061	Balance Sheet	US-061	Transaction, Account	apps/api/src/routes/reports.ts	<input type="checkbox"/>	<input type="checkbox"/>	NF-AC-030	<input type="checkbox"/> Not Started
BR-007	Multi-user RBAC	FR-003	Invite User	US-003, US-004	User, Organization (RBAC)	apps/api/src/middleware/auth.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-001 (ext)	<input type="checkbox"/> Not Started
BR-008	PDF invoice + email	FR-010	Invoice PDF delivery	US-010	Invoice	apps/api/src/services/email.service.ts	<input type="checkbox"/>	<input type="checkbox"/>	INT-004	<input type="checkbox"/> Not Started
BR-009	Expense tracking	FR-020	Create Expense	US-020	Expense	apps/api/src/routes/expenses.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-070	<input type="checkbox"/> Not Started

BR ID	Business Requirement	FR ID	Functional Requirement	US ID	DB Model	Code Module	Unit Test	Integration Test	AC ID	Status
BR-010	Chart of Accounts	FR-030	Chart of Accounts	US-030	Account, Account Type	apps/api/src/services/accounts.service.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-003, AC-039	<input type="checkbox"/> Not Started
BR-011	Serbian language	N/A	i18n / l10n (frontend)	N/A	N/A	apps/web/lib/i18n/	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/> Not Started
BR-012	Immutable audit trail	FR-031	Logged Action (all mutations)	US-031	Logged Action	apps/api/src/middleware/audit.ts	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/> Not Started
BR-013	Data export (GDPR)	N/A	Export API endpoint	N/A	All models	apps/api/src/routes/export.ts	<input type="checkbox"/>	<input type="checkbox"/>	—	<input type="checkbox"/> Not Started
BR-014	Secure multi-tenancy	FR-001, FR-002	Auth (register/login)	US-001, US-002	User, Organization	apps/api/src/routes/auth.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-001, AC-020	<input type="checkbox"/> Complete

“ Note: BR-014 Auth endpoints are the only complete items — 4/50 auth endpoints built (2026-02-20).

## 3.2 Non-Functional Requirements Traceability

NFR ID	Requirement	Target	Test Type	Test Case ID	Status
NFR-P01	Dashboard load < 3s initial	< 3s (4G)	Performance	PERF-001	<input type="checkbox"/> Not Started
NFR-P02	Dashboard < 1s subsequent	< 1s warm cache	Performance	PERF-002	<input type="checkbox"/> Not Started
NFR-P04	API response < 300ms	p95 < 300ms	Performance	PERF-003	<input type="checkbox"/> Not Started
NFR-SEC01	JWT authentication	15min access + 30d refresh	Security	SEC-001	<input type="checkbox"/> Complete (auth built)
NFR-SEC06	Input validation (Zod)	All inputs validated server-side	Security / SAST	SEC-010	<input type="checkbox"/> In Progress

NFR ID	Requirement	Target	Test Type	Test Case ID	Status
NFR-SEC10	Org data isolation	No cross-tenant access	Security	SEC-020	<input type="checkbox"/> In Progress (middleware built)
NFR-R02	ACID compliance	100% ACID transactions	Database	DB-001	<input type="checkbox"/> In Progress (PostgreSQL + Prisma)
NFR-R03	Double-entry balance	Debit = Credit always	Database / CI	DB-002	<input type="checkbox"/> Not Started
NFR-D01	NUMERIC(19,4) monetary	No float for money	Database	DB-010	<input type="checkbox"/> Complete (schema enforced)
NFR-COMP01	SEF e-invoicing compliance	100% UBL 2.1	Compliance	COMP-001	<input type="checkbox"/> Not Started
NFR-COMP02	PDV compliance	Correct PDV rates	Compliance	COMP-002	<input type="checkbox"/> Not Started
NFR-COMP04	GDPR compliance	Right to deletion; export	Compliance	COMP-010	<input type="checkbox"/> Not Started
NFR-U03	WCAG 2.1 AA	Level AA	Accessibility	A11Y-001	<input type="checkbox"/> Not Started
NFR-A01	Uptime ≥ 99.9%	99.9% monthly	Operations	OPS-001	N/A (pre-launch)

## 4. Backward Traceability Matrix

Test Case ID	Test Description	AC ID	FR ID	BR ID	Has Requirement?
TC-AUTH-001	User registration flow	AC-001	FR-001	BR-014	<input type="checkbox"/> Yes
TC-AUTH-002	Login with JWT	AC-020	FR-002	BR-014	<input type="checkbox"/> Yes
TC-AUTH-003	Token refresh	AC-021	FR-002	BR-014	<input type="checkbox"/> Yes
TC-AUTH-004	Account lockout (5 attempts)	AC-024	FR-002	BR-014	<input type="checkbox"/> Yes
TC-INV-001	Invoice PDV 20% calculation	AC-030	FR-010	BR-002	<input type="checkbox"/> Yes
TC-INV-002	Invoice PDV 10% calculation	AC-031	FR-010	BR-002	<input type="checkbox"/> Yes
TC-INV-003	NUMERIC precision (no float)	AC-040, NF-AC-031	FR-010	BR-002	<input type="checkbox"/> Yes

Test Case ID	Test Description	AC ID	FR ID	BR ID	Has Requirement?
TC-SEF-001	SEF UBL 2.1 submission	AC-050	FR-011	BR-001	<input type="checkbox"/> Yes
TC-SEF-002	SEF rejection handling	AC-052	FR-011	BR-001	<input type="checkbox"/> Yes
TC-SEF-003	SEF unavailable — queue	AC-053	FR-011	BR-001	<input type="checkbox"/> Yes
TC-ACC-001	Debit = Credit balance check	NF-AC-030	FR-031	BR-003	<input type="checkbox"/> Yes
TC-ACC-002	Exchange rate immutability	NF-AC-032	FR-070	BR-004	<input type="checkbox"/> Yes
TC-PDV-001	Monthly PDV report accuracy	AC-080, AC-083	FR-050	BR-002, BR-006	<input type="checkbox"/> Yes
TC-SEC-001	Cross-tenant data isolation	NF-AC-020	N/A	BR-014	<input type="checkbox"/> Yes

## 5. Coverage Analysis

### 5.1 Requirement Coverage Summary

Category	Total Count	Fully Covered	Partially Covered	Not Covered	Coverage %
Business Requirements (BR)	14	1 (BR-014 auth)	3 (schema, middleware)	10	7%
Functional Requirements (FR)	14	2 (FR-001, FR-002)	2 (FR-003, FR-030)	10	14%
Non-Functional Requirements (NFR)	30	5	4	21	17%
User Stories (US)	15	2 (US-001, US-002)	0	13	13%
Acceptance Criteria (AC)	40+	0 (all Draft)	0	40	0%

**Overall Requirement Coverage:** ~7% (project in early development phase — backend 4/50 endpoints complete) **Target:** ≥ 95% before UAT (estimated Sprint 4); 100% before production release



This is expected at current stage. Backend foundation complete (auth, middleware, DB schema). 46 API endpoints remaining.

## 5.2 Test Coverage Summary

Test Type	Total Tests	Passing	Failing	Skipped	Coverage
Unit tests	0 (not yet written)	0	0	0	0%
Integration tests	4 (auth endpoints)	4	0	0	auth only
E2E / UAT scenarios	0	0	0	0	0%
Performance tests	0	—	—	—	0%
Security tests	0	—	—	—	0%

“ Test coverage target:  $\geq 80\%$  overall,  $\geq 95\%$  for financial logic (double-entry, PDV, SEF) before launch.

## 6. Gap Identification

### 6.1 Requirements Without Test Coverage (All Phase 1 Non-Auth)

Requirement ID	Description	Gap Type	Action Required	Owner	Target Date
BR-001	SEF e-invoicing	No tests for SEF integration	Create TC-SEF-001 through TC-SEF-003	John	2026-03-21 (SEF integration sprint)
BR-002	PDV calculation	No tests for PDV accuracy	Create TC-INV-001 through TC-INV-003; verify against Zakon o PDV	John	2026-03-14

Requirement ID	Description	Gap Type	Action Required	Owner	Target Date
BR-003	Double-entry	No tests for accounting balance	Create TC-ACC-001; CI balance check	John	2026-03-07
FR-050	PDV Report	No implementation yet	Build + test in Sprint 3	builder agent	2026-03-21
FR-060	P&L Statement	No implementation yet	Build + test in Sprint 3	builder agent	2026-03-21
NFR-D01	NUMERIC precision	Schema enforced but no test	Add TC-INV-003 decimal precision test	John	2026-03-07

## 6.2 Test Cases Without Requirements (Orphans)

Test Case ID	Description	Status	Action
—	No orphaned tests at this stage	N/A	N/A

## 6.3 Requirements Without Design Reference

Requirement ID	Description	Action
FR-011	SEF Submission UI (status display)	Existing invoice detail page — update to show SEF status field
FR-040	Bank CSV Import UI	New page <code>/banking</code> — existing placeholder page needs implementation
FR-050	PDV Report page	Existing <code>/reports/vat</code> placeholder — needs full implementation

# 7. Change Impact Tracking

Change Request ID	Changed Requirement	Impact on FR	Impact on Code	Impact on Tests	Impact Assessment	CR Status
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—	No change requests at this stage	—	—	—	—	—
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**Key anticipated change risk:** If SEF API changes (Risk R-001 in risk register), the following would need updating:

- FR-011 (SEF submission logic)
- `apps/api/src/services/sef.service.ts`
- TC-SEF-001, TC-SEF-002, TC-SEF-003
- UBL 2.1 XML generation templates
- AC-050, AC-052, AC-054

## 8. Traceability Status Dashboard

**Last Updated:** 2026-02-23 **Updated By:** John (AI Director)

Metric	Value	Target	Status
Total Business Requirements	14	—	
BRs with FR coverage	14 / 14	100%	<input checked="" type="checkbox"/> All mapped
FRs with test coverage	2 / 14	100%	<input type="checkbox"/> In progress
Test cases passing	4 / 4 (auth only)	100%	<input type="checkbox"/> (auth only)
Open gaps	11 FRs untested	0 at launch	<input type="checkbox"/> Expected at this stage
Change requests open	0	≤ 3 at a time	<input type="checkbox"/>
UAT sign-off pending	0 (pre-launch)	0 at launch	N/A

**Overall RTM Health:** AMBER — Expected for current development phase. All requirements defined and mapped to code modules. Test coverage to be built alongside each feature in Sprints 2-4.

## Approval

Role	Name	Date	Signature
Author	John (AI Director)	2026-02-23	
Reviewer			
Business Analyst	John	2026-02-23	

<b>Role</b>	<b>Name</b>	<b>Date</b>	<b>Signature</b>
QA Engineer	validator agent		
Tech Lead	John	2026-02-23	
AI Director (John)	John	2026-02-23	

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Revision #3

Created 2026-02-24 22:50:51 UTC by John

Updated 2026-05-31 20:03:51 UTC by John