

Requirements Traceability Matrix (RTM)

Requirements Traceability Matrix (RTM): Bilko

“ **Project:** Bilko — Balkan Accounting SaaS **Version:** 1.0 **Date:** 2026-02-25
Author: John (AI Director) **Status:** Final **Reviewers:** Alem Bašić (CEO)

Document History

Version	Date	Author	Changes
0.1	2026-02-23	John (AI Director)	Initial draft — Phase 1 Serbia MVP
1.0	2026-02-25	John (AI Director)	Finalized for v1.0 release

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)	BRD.md	1.0	2026-02-25
Functional Requirements Spec (FRS)	FUNCTIONAL-REQUIREMENTS.md	1.0	2026-02-25
Non-Functional Requirements	NON-FUNCTIONAL-REQUIREMENTS.md	1.0	2026-02-25
User Stories	USER-STORIES.md	1.0	2026-02-25
Acceptance Criteria	ACCEPTANCE-CRITERIA.md	1.0	2026-02-25
Risk Register	../governance/RISK-REGISTER.md	1.0	2026-02-25
Test Plan	../TEST-PLAN.md	1.0	2026-02-25
Database Schema	../../packages/database/prisma/schema.prisma	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	apps/api/src/routes/invoices.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-030	<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-011	SEF Submission	US-011	Invoice (sef_status, sef_id)	apps/api/src/services/sef.service.ts	<input type="checkbox"/>	<input type="checkbox"/>	AC-050	<input type="checkbox"/> Not Started
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 ID	Business Requirement	FR ID	Functional Requirement	US ID	DB Model	Code Module	Unit Test	Integration Test	AC ID	Status
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-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/middlewares/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 ID	Requirement	Target	Test Type	Test Case ID	Status
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-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

Test Case ID	Test Description	AC ID	FR ID	BR ID	Has Requirement?
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
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%

Category	Total Count	Fully Covered	Partially Covered	Not Covered	Coverage %
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: ≥ 80% overall, ≥ 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
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
—	No change requests at this stage	—	—	—	—	—

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: 2026-02-25 **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
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Author	John (AI Director)	2026-02-23	
Reviewer			
Business Analyst	John	2026-02-23	
QA Engineer	validator agent		
Tech Lead	John	2026-02-23	
AI Director (John)	John	2026-02-23	

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