Automaspec

AI-Powered Test Specification & Automation

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> 💡 **One platform to manage all your test specs, track coverage, and generate requirements with AI — instead of juggling Jira, Confluence, and Slack.**

1. The Problem & Business Impact

The Problem

- Docs and code get out of sync over time
- Too many sources of truth: Jira, Confluence, Slack
- Test results hidden in CI/CD logs

Business Impact

- ❌ Slow time-to-market
- ❌ Increased regression risks
- ❌ Team frustration from manual sync
- ❌ Poor visibility into test coverage

2. Goal & Scope

Goal: Build a unified platform for QA teams to:

- Store all test specs in one place
- Track test status from CI/CD in real-time
- Use AI to help write specs faster

Scope: Web app with auth, multi-org support, GitHub Actions sync

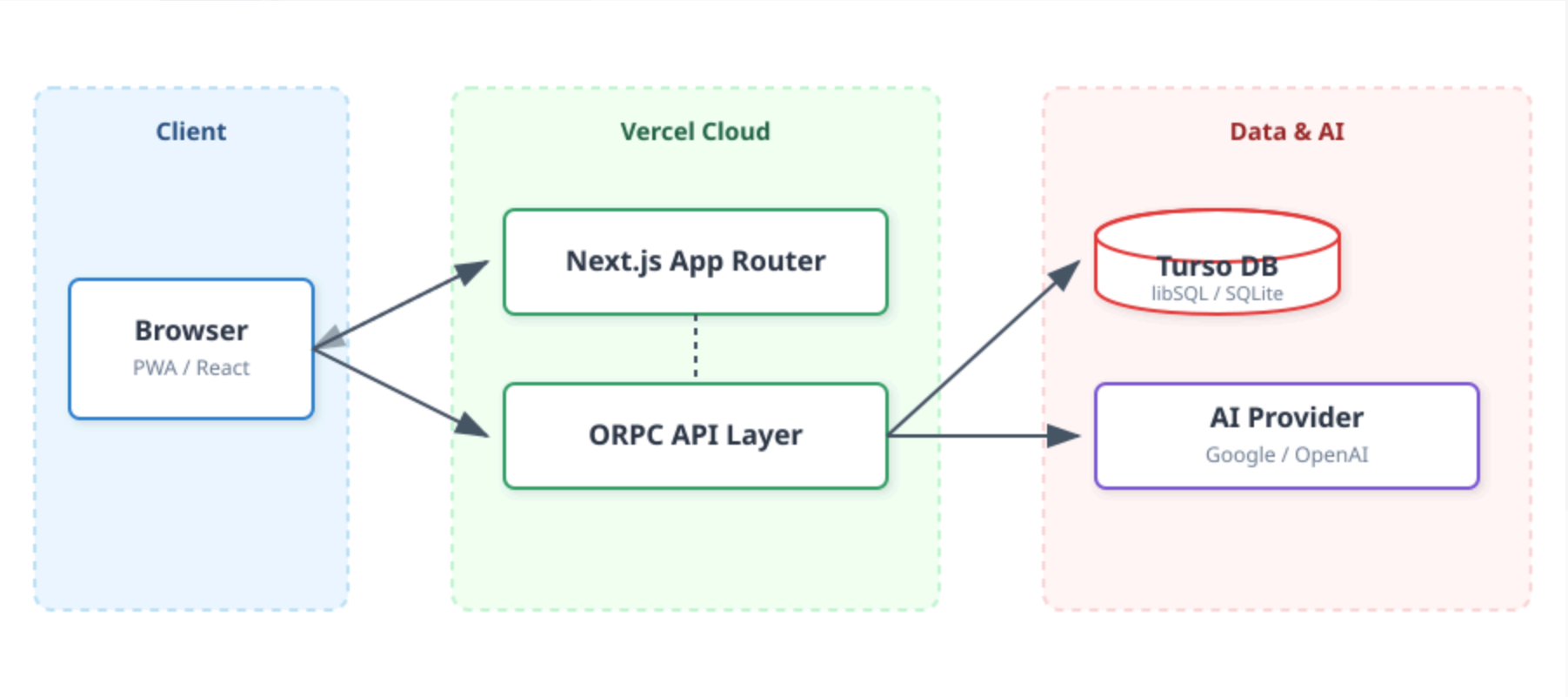
3. The Solution: Unified QA Engine

- **Single Source of Truth**: Centralized specification management.
- **Context-Aware AI**: LLM fed with real project requirements.
- **Live CI/CD Sync**: Status mapped directly to business specs.
- **Multi-Tenant**: Secure isolation for multiple organizations.

4. Tech Stack

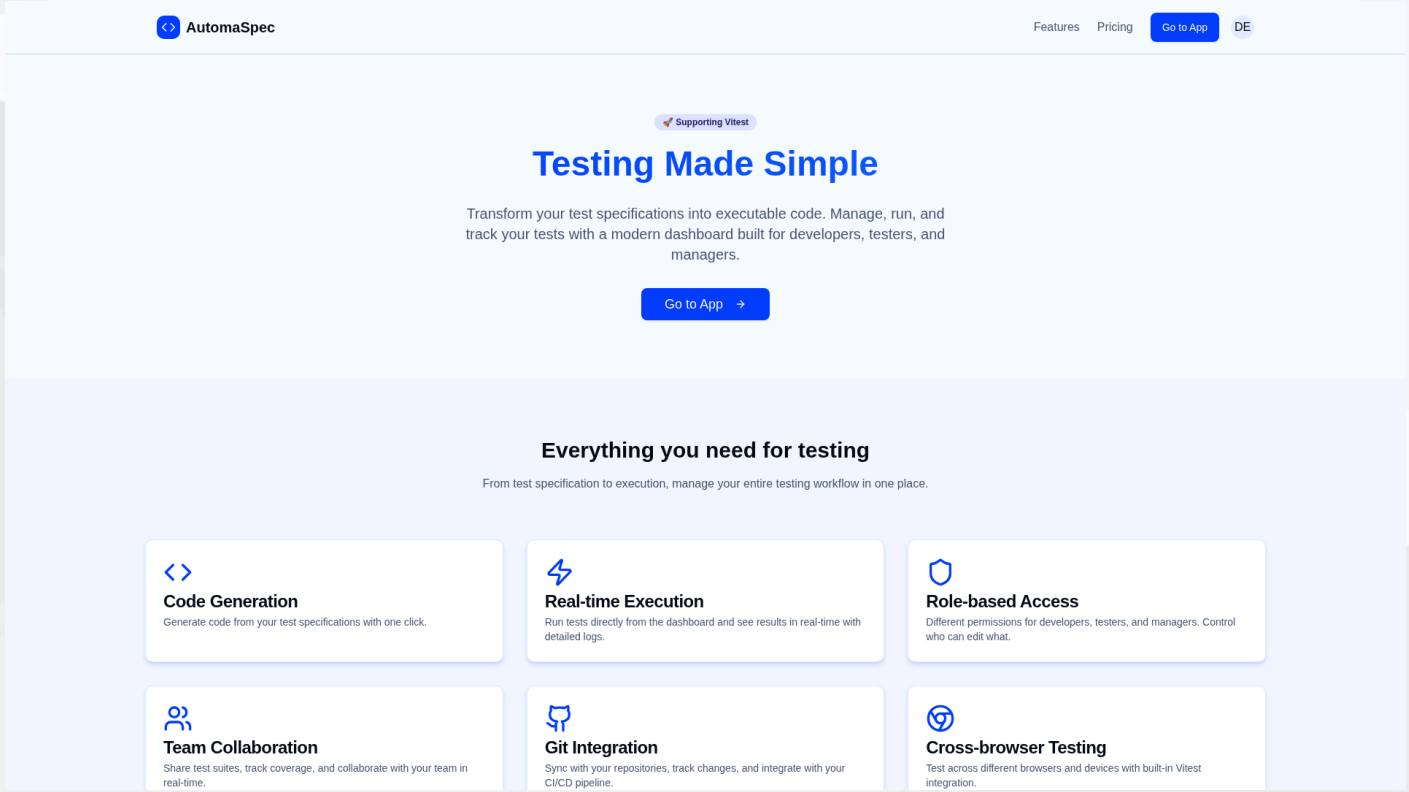
Layer	Technology	Purpose
Frontend	Next.js 16, React 19, TailwindCSS v4	App Router, modern UI
UI Components	Shadcn/ui	Accessible, customizable components
Backend API	oRPC	Contract-first, type-safe RPC
ORM	Drizzle	Type-safe SQL queries
Database	Turso	Distributed SQLite, edge-ready
Auth	Better Auth	Session management, RBAC
AI	Vercel AI SDK	LLM integration (OpenRouter, Gemini)
Hosting	Vercel	Serverless deployment
CI/CD	GitHub Actions	Automated testing & deployment

5. High-Level Architecture



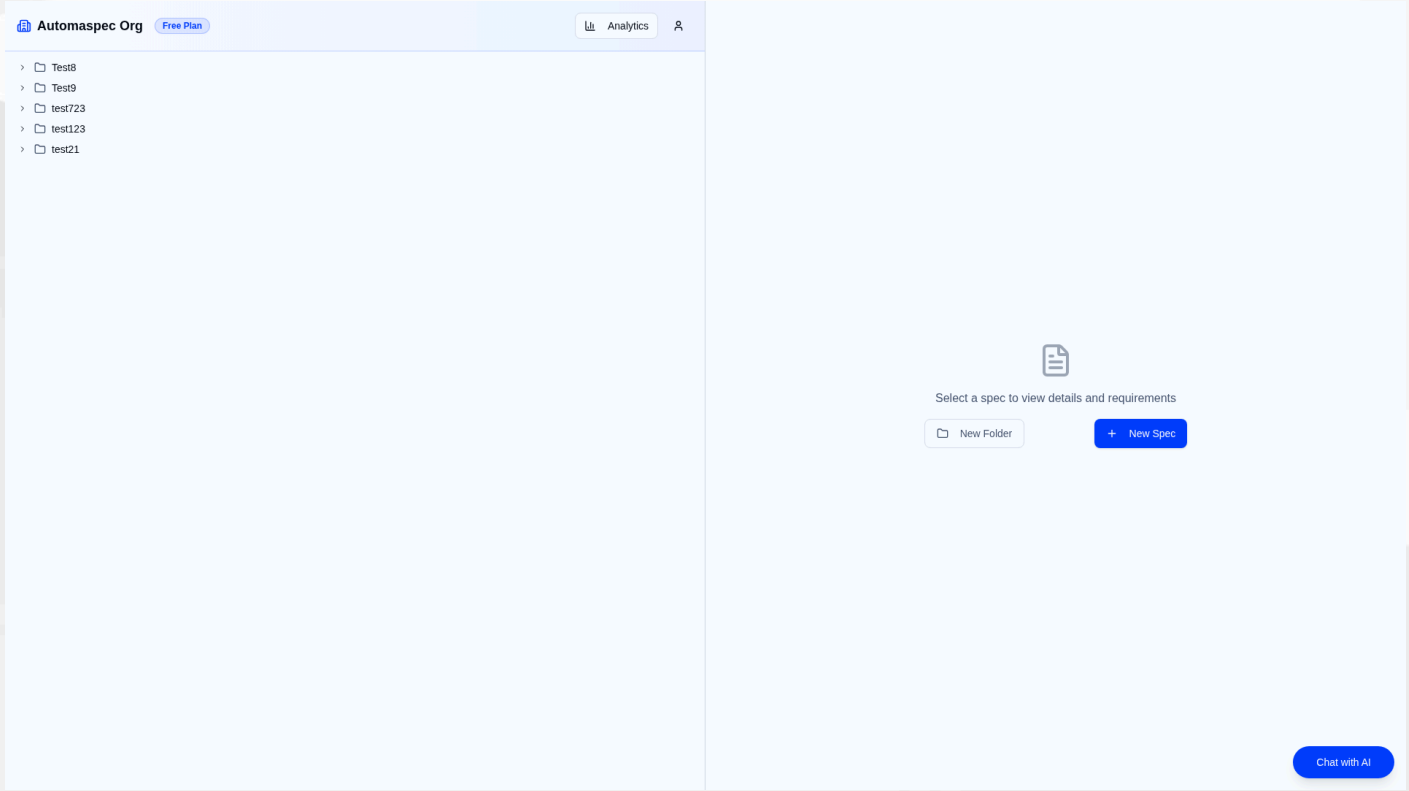
6. Demo: Home & Authentication

- **Landing Page**: Professional overview of capabilities.
- **Auth Flow**: Secure login via Better Auth.
- **Organization**: Seamlessly switch between workspaces.



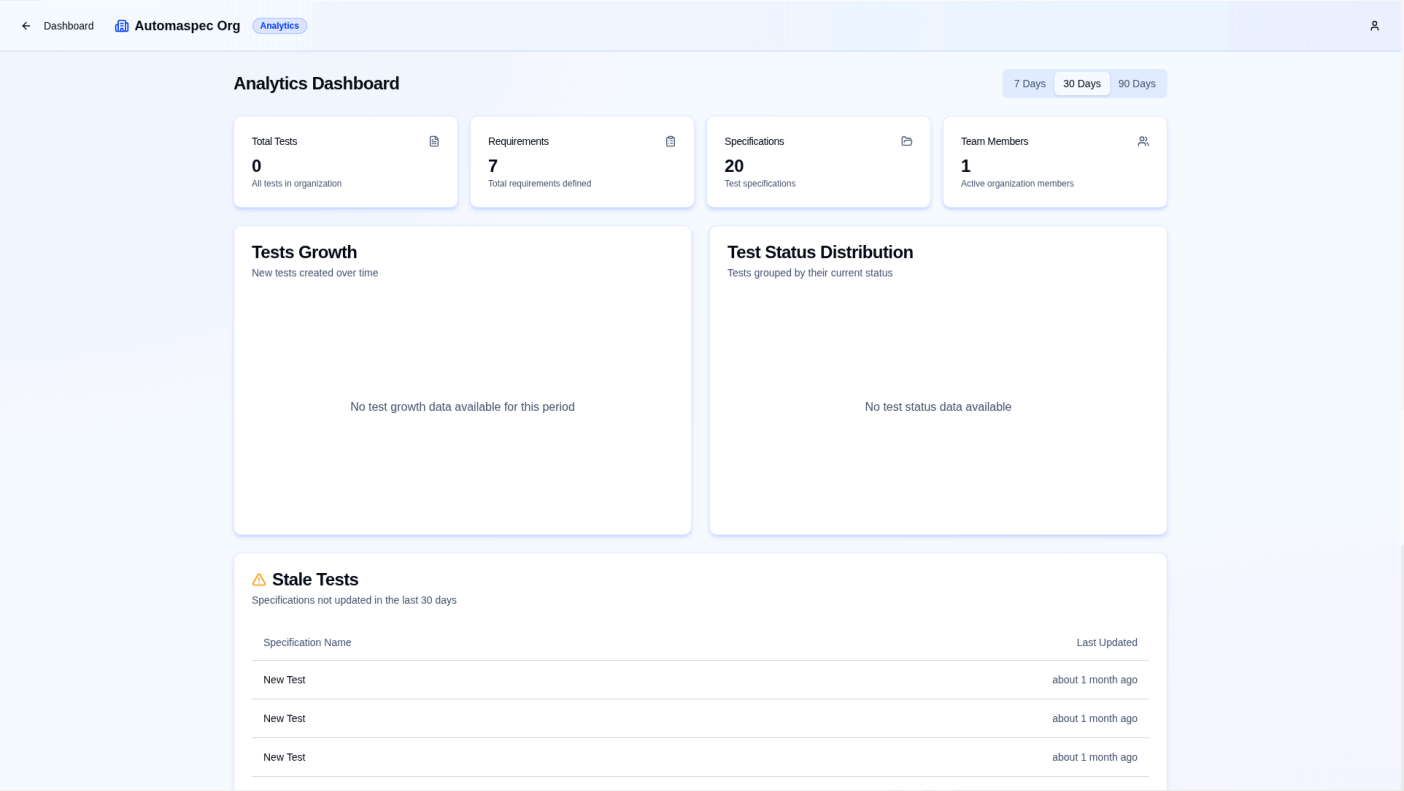
7. Demo: Testing Dashboard

- **Hierarchy**: Navigate folders and specs with ease.
- **AI Side Panel**: Create specifications and organize requirements with AI assistance.
- **Live Status**: Real-time results from GitHub Actions.



8. Analytics Dashboard

- **Test Status Distribution**: Visual breakdown of passed/failed/pending tests.
- **Coverage Metrics**: Track test coverage across specifications.
- **Trend Analysis**: Monitor testing progress over time.



9. Business Analysis

Key User Stories Implemented

Epic	User Story	Priority
Auth & Orgs	Sign up, create organization, invite team members	Must
Test Hierarchy	Create nested folders, specs, requirements, drag-and-drop	Must
AI Assistant	Create specs with AI, get structure suggestions	Must
Status Tracking	View test status (passed/failed/pending), aggregated stats	Must
CI/CD	Connect GitHub repo, automatic test result sync	Must

KPIs: ↓ 20-30% test creation time ● ↑ 40% coverage visibility ● 80% adoption in 2 months

10. Backend Architecture

Layered Architecture

Key Benefits

- **Type Safety**: Contract-first with Zod validation
- **Separation of Concerns**: Clear layer boundaries
- **Middleware**: Auth, logging, error handling
- **Scalability**: Modular route structure
- **Auto Docs**: Generated API documentation

11. Database Engineering

Design: 3NF • Multi-tenant isolation • Self-referential folders • Turso (distributed SQLite) • Drizzle ORM

Table	Purpose	Source
`user`	User accounts	Better Auth
`session`	Active sessions	Better Auth
`account`	OAuth providers	Better Auth
`verification`	Email verification	Better Auth
`organization`	Multi-tenant root	Better Auth
`member`	Org membership & roles	Better Auth
`invitation`	Team invites	Better Auth
`test_folder`	Hierarchical folders (self-ref)	Custom
`test_spec`	Test specifications	Custom
`test_requirement`	Requirements per spec	Custom
`test`	Individual test cases	Custom

12. Testing Strategy

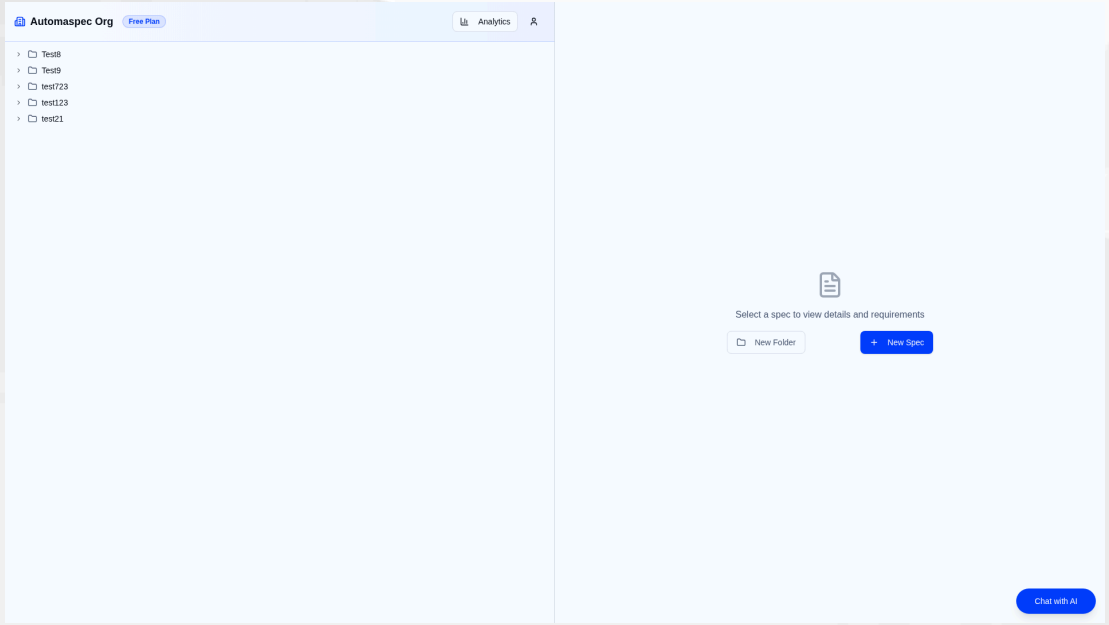
- **Quality Gates**: ≥70% coverage enforced in CI.
- **Playwright E2E**: Critical flow (Auth, Tree Ops) validation.
- **Vitest**: Logic testing & oRPC procedure verification.

Result: A self-documented, high-reliability platform.

13. AI Assistant

How it works

- AI helps write specs & requirements
- Streaming: see results in real-time
- Context-aware suggestions
- Multiple LLM providers (OpenRouter, Gemini)
- Prompt engineering for quality output



14. Technical Challenges

Challenge	Solution	Impact
AI Accuracy	Structured context injection	High quality suggestions
Hierarchy	Self-referential Drizzle schemas	Unlimited nesting
CI/CD Sync	Secure webhook integration	Real-time status
Multi-Tenancy	Organization-level isolation	Secure data separation

15. Results & Future Work

For Users

- ✅ Less sources of truth for test documentation
- ✅ Tracking finalized requirements in one place
- ✅ AI-assisted specification creation
- ✅ Real-time CI/CD status tracking
- ✅ Multi-organization support

Technical Achievements

- ✅ **70%+** Code Coverage
- ✅ **5 Criteria** Implemented
- ✅ **Production Ready**: automaspec.vercel.app
- ✅ Type-safe end-to-end architecture
- ✅ Comprehensive API documentation

16. Q&A

Roman Radchenko (JS-22)

- **Repo**: github.com/automaspec/automaspec
- **App**: automaspec.vercel.app
- **Docs**: /rpc/docs