SchichtPlan

Intelligent Shift Scheduling for the German Market

Product & Investment Report

15.02.2026

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1 Executive Summary

SchichtPlan is a fully developed SaaS solution for shift scheduling, specifically designed for the German market. The platform covers the complete lifecycle of workforce shift management: from employee and location management, through shift planning and time tracking, to payroll export in DATEV format.

The application is in an advanced development stage with 11 fully functional dashboard pages, 20+ API endpoints, 14 database models, and an automation engine with 10 configurable rules. The entire platform is bilingual (German/English) and compliant with the German Working Time Act (ArbZG).

Key strengths:
  - ArbZG-compliant working time validation (rest periods, breaks, hour limits)
  - 6-step time entry workflow with full audit trail
  - DATEV-compatible payroll export
  - 10 configurable automation rules
  - Full bilingual support (DE/EN)

Critical gaps that must be addressed before market launch:
  - Missing route protection (no middleware.ts)
  - No team invitation feature (multi-user impossible)
  - Employees not linked to user accounts (no self-service)

2 Technology Stack

Layer	Technology
Frontend	Next.js 16.1.6, React 19.2, TypeScript 5, Tailwind CSS 4
Backend	Next.js API Routes (App Router), Server Components
Datenbank / Database	Supabase PostgreSQL + Prisma 7.4 (Driver Adapter)
Authentifizierung / Auth	NextAuth 4.24 (JWT + Credentials)
E-Mail / Email	Resend SDK
i18n	next-intl 4.8.2 (Cookie-basiert / Cookie-based)
Icons	55+ benutzerdefinierte SVG-Komponenten / 55+ custom SVG components
Hosting	Vercel (geplant / planned)

3 Architecture

Metric	Value
Pages	13 pages (1 landing, 2 auth, 11 dashboard)
API Endpoints	~20 API endpoints across 15 route files
DB Models	14 database models
Enums	9 enums
Icons	55+ SVG components
i18n	~300+ translation keys (DE + EN)
Automations	10 deterministic automation rules

4 Feature Inventory

The following table lists all working features of the application, grouped by category. Each feature has been verified against the source code.

Total features: 56

Authentication & Registration

Feature	Details
Email + password registration	Creates user + workspace in a single transaction
Credentials login	JWT-based session via NextAuth
Logout	From sidebar and settings page
Password change	Secure hashing with bcrypt
Profile name editing	Inline editing in settings

Dashboard

Feature	Details
Stats cards	Employees, shifts, locations, today's shifts
Onboarding wizard (3 steps)	Shows when location/employee/shift count = 0
Today's shift list	Timezone-aware (Europe/Berlin)
Pending items panel	Absences, swaps, time entries
Quick action buttons	Links to create employee/shift/location

Shift Planning

Feature	Details
Weekly calendar grid (Mon-Sun)	Desktop 7-column + mobile vertical layout
Create/edit/delete shifts	Modal forms with confirmation dialogs
Location filter	Client-side dropdown filtering
Recurring shifts	Up to 52 weeks repetition
Conflict detection on create	Overlap, absence, rest period, hour limits

Employee Management

Feature	Details
CRUD with search	Card layout with avatar, email, phone, hourly rate
Activate/deactivate toggle	Badge click toggles isActive
Auto color assignment	Random color on creation

Location Management

Feature	Details
CRUD with search	Card grid with create/edit/delete

Time Tracking

Feature	Details
Create/edit/delete	Only editable in DRAFT/CORRECTION status
6-step status workflow	DRAFT > SUBMITTED > REVIEWED > CONFIRMED (with correction loop)
Role-based actions	Managers: approve/reject/correct. Employees: submit
Overlap detection	Prevents duplicate entries
Audit log	Records every status change with performer + diff
CSV export	German semicolon-separated with BOM for Excel
ArbZG break enforcement	Auto-adjusts break minutes per German labor law

Absence Management

Feature	Details
Create request	7 categories, date range, half-day support
Approve/reject	With cascading shift cancellation
Overlap check	Prevents duplicate requests
Auto-approve	Configurable for sick leave

Shift Swap

Feature	Details
Create swap request	Requester, shift, optional target
Approve/reject	With actual shift reassignment in transaction

Availability

Feature	Details
Set weekly availability	7-day form with type + time range
3 availability types	Available, Preferred, Not Available

Time Accounts

Feature	Details
Create/update account	Contract hours, carryover, period start
Balance calculation	Carryover + worked - expected
Progress bar	Visual worked vs expected

Payroll Export

Feature	Details
DATEV-compatible CSV export	Only confirmed entries
Preview table	JSON mode shows per-employee breakdown
Date range + employee filter	Quick presets available

Automations Engine (10 rules)

Feature	Details

Feature	Details
Shift conflict detection	Overlap, absence, unavailability
Rest period enforcement (ArbZG 11h)	Checks prev/next day
Max daily hours (10h)	ArbZG section 3
Max weekly hours (48h)	ArbZG section 3
Cascade absence cancellation	Cancels overlapping shifts
Auto-create time entries	Cron-ready endpoint
Legal break enforcement	ArbZG-compliant break minutes
Time account recalculation	Triggered on confirmation
Auto-approve	For sick leave and conflict-free swaps
Overtime alerts	Cron-ready endpoint

Notifications

Feature	Details
In-app notifications	Polling, badge, mark-read
Email via Resend	Templates for all major events
Notification preferences	Per-user email opt-in/out

Internationalization

Feature	Details
German (default)	Full coverage
English	Full coverage
Cookie-based locale switching	next-intl v4.8.2

5 Known Bugs

4 bugs were identified in the source code:

No conflict detection on shift edit

MITTEL / MEDIUM

Location: src/app/api/shifts/[id]/route.ts

PATCH /api/shifts/[id] does not call checkShiftConflicts. Shifts can be edited to overlap or violate rest periods silently.

Shift swap form: broken filter

MITTEL / MEDIUM

Location: src/app/(dashboard)/schichttausch/page.tsx:195

The requesterShifts variable in schichttausch/page.tsx (line 195) has a filter condition that always returns true. The dropdown shows all shifts instead of only the requester's.

Mixed error languages in API

NIEDRIG / LOW

Location: Diverse API-Routen / Various API routes

Some API routes return German strings, others English. Inconsistent error handling.

No middleware for route protection

HOCH / HIGH

Location: Fehlend / Missing: middleware.ts

No middleware.ts exists. All dashboard routes are unprotected at edge level. Session is only checked inside API handlers and server components.

6 Dead Code & Unused Schema

The following 10 items exist in the source code or database schema but serve no function or are never used:

Item	Location	Reason
requesterShifts variable	schichttausch/page.tsx:195	Computed but never correctly used. Filter always returns true.
MANAGER / EMPLOYEE roles	schema.prisma	Exists in enum but no UI to assign roles. Registration always creates OWNER.
ShiftStatus enum (6 values)	schema.prisma	Shifts are always SCHEDULED. No workflow to change status.
shiftId on TimeEntry	schema.prisma	Optional link exists but is never set from the UI.
phone / image on User	schema.prisma	Fields exist, no UI to set them.
industry on Workspace	schema.prisma	Exists in schema, never collected or displayed.
Account / Session / VerificationToken models	schema.prisma	NextAuth OAuth models but only Credentials provider configured. Tables always empty.
test-email route	api/test-email/route.ts	Works but no UI exposes it. Only callable via curl.
validUntil on Availability	schema.prisma	Field for expiring availability exists, form never sets it.
Cron endpoints (3x)	api/automations/*	3 endpoints support CRON_SECRET but no vercel.json exists.

7 Missing Features

12 missing features were identified, prioritized by impact on market readiness:

Feature	Priority	Description
Password Reset	MITTEL / MEDIUM	No email-based password reset. Login just shows 'contact administrator'.
Team Invitations	HOCH / HIGH	No way to invite other users into the workspace. Each must register separately.
Employee-User Linking	HOCH / HIGH	Employee and User are separate models. No self-service for employees.
Shift Status Workflow	MITTEL /	6 statuses in enum but no UI or API to change. Always SCHEDULED.
Vercel Cron Configuration	MITTEL /	3 automation endpoints are ready but no vercel.json is configured.
Vacation Balance	MITTEL /	Absences are tracked but no remaining vacation days counter.
Employee Self-Service	HOCH / HIGH	Employees cannot view their own schedule, submit time entries, or request absences.
Drag-and-Drop Shift Planning	NIEDRIG / LOW	Shifts can only be moved by editing the form.
Calendar Month/Day View	NIEDRIG / LOW	Only weekly view available.
PDF/Print Export	NIEDRIG / LOW	No print format or PDF generation.
Workspace Name Editing	NIEDRIG / LOW	Settings show ID but no way to change the name.
Dark Mode	NIEDRIG / LOW	No dark mode support.

8 Roadmap

The following roadmap prioritizes development in three phases, based on criticality and market readiness requirements:

Phase 1 - Critical Fixes (1-2 weeks)

- Add middleware.ts for route protection
- Add conflict detection on shift edit
- Fix shift swap filter logic
- Create vercel.json cron configuration

Phase 2 - Core Features (3-6 weeks)

- Team invitation system via email
- Employee-user linking + self-service portal
- Password reset via email (Resend)
- Role management UI (OWNER/MANAGER/EMPLOYEE)

Phase 3 - Enhancements (6-12 weeks)

- Vacation balance tracking
- Shift status workflow UI
- Calendar month/day view
- Drag-and-drop shift planning
- PDF/print export
- Dark mode

9 Conclusion

SchichtPlan is a technically mature product with a solid architecture and comprehensive feature set. The platform addresses a clearly defined market segment - shift scheduling for small and medium enterprises in the German market - with special focus on ArbZG (Working Time Act) compliance.

The product is in a state where core functionality is fully implemented, but critical gaps in multi-user capability and security must be closed before a public launch is possible.

With implementation of Phase 1 fixes (estimated 1-2 weeks), the product would be technically ready for a beta launch. Phase 2 enhancements (3-6 weeks) would enable multi-user capability, which is essential for commercialization.

Investment Highlights

- Fully ArbZG-compliant tech stack - unique differentiator in the market
- 14 database models, 20+ API endpoints, 11 dashboard pages = significant existing development value
- DATEV payroll export integrated = immediate compatibility with German payroll accounting
- Bilingual (DE/EN) = expansion capability into DACH region and beyond
- Modular automation engine = platform extensibility for future rules
- Modern tech stack (Next.js 16, React 19, Prisma 7) = long-term maintainability