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Part 2: Detailed analysis

Legacy Check – Example report

AuftragsPro · Muster Metallbau GmbH (fictional)

Analysis of a VB.NET application (.NET Framework 4.8) with a SQL Server database

September 2026 · Version 1.0

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Fictional example: company, application and all figures are invented. Structure and depth match a real Legacy Check.

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1 Assignment and approach

The goal of the Legacy Check was a sound basis for deciding the future of AuftragsPro. It was based on the complete source code (SVN state of 1 September 2026), an anonymised copy of the database schema with volume figures, the server configuration and two interviews. The code analysis was AI-assisted in an isolated environment; all findings were reviewed manually. No live data was processed.

Scope

- Analysis of the complete source code and database schema (anonymised copy, no live data)
- AI-assisted code analysis with the right model for each task and proven prompts, all findings reviewed by experienced developers
- Two interviews: business department (order processing) and IT
- Review of infrastructure, operations, third-party components and licences
- Results presentation (online, 60 minutes) and this report

Not included: Not included: load tests, penetration test, review of workstations.

Goals

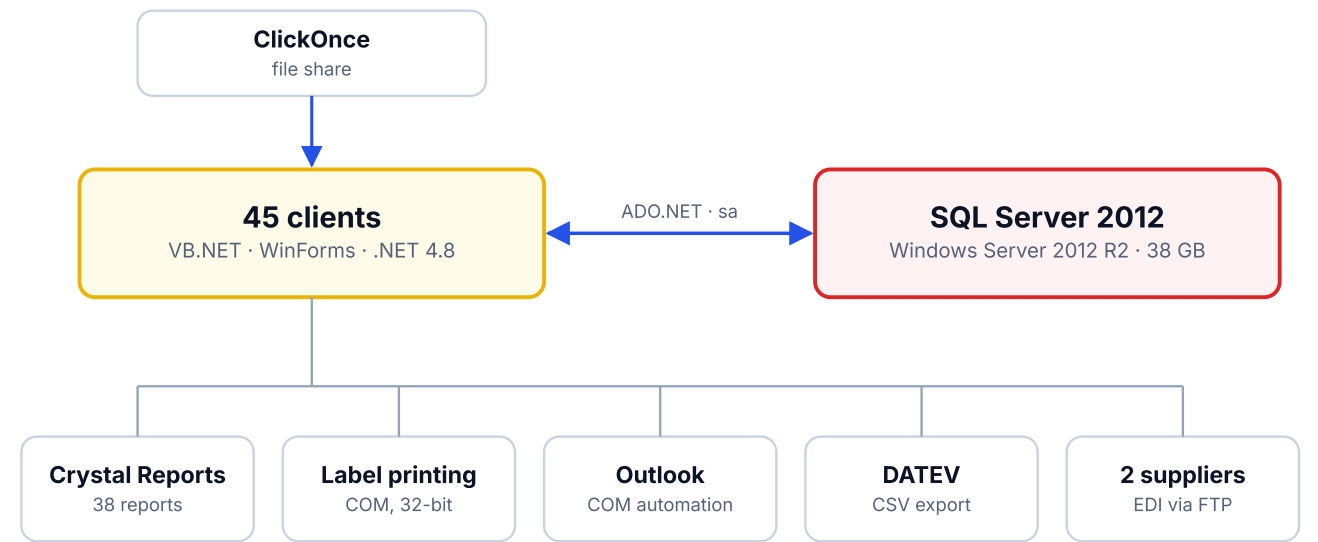
- Assess risks for operations and IT security
- Secure knowledge of business logic and technology
- Find an economical path for the next 5–10 years

Fixed price €2,499 net · Completed within 2 calendar weeks

2 System overview

Muster Metallbau GmbH (fictional) – Mid-sized metalworking company with 140 employees at two sites. Central order processing: quotes, orders, costing, production orders, delivery notes, label printing, invoice preparation and DATEV export (German accounting software).

AuftragsPro is a classic two-tier application: the Windows Forms clients access the SQL Server database directly. There is no application server; part of the business logic lives in stored procedures.



Language / platform	VB.NET, .NET Framework 4.8, Windows Forms
Size	9 Visual Studio projects, approx. 186,000 lines of code, 412 forms and classes
Database	Microsoft SQL Server 2012 on Windows Server 2012 R2 · 214 tables, 96 stored procedures, 38 GB
Reports	38 Crystal Reports
Interfaces	DATEV export (CSV), EDI with two suppliers via FTP, Outlook automation, label printing (COM)
Usage	45 users, 2 sites, deployed via ClickOnce
Development	Source code in SVN, no build server, no automated tests
Documentation	One Word document from 2011 (12 pages)

3 Code analysis

The code has grown over 17 years. It is functionally stable but follows no consistent architecture: much of the business logic sits directly in the forms, and data access is spread across all projects.

Projects in the solution

PROJECT	PURPOSE	LINES OF CODE	CLASSES	OPTION STRICT
AuftragsPro.Main	Main window, menus, login	21,400	38	off
AuftragsPro.Auftrag	Quotes and orders	42,800	96	off
AuftragsPro.Kalkulation	Costing, special prices	31,200	54	off
AuftragsPro.Fertigung	Production orders	24,600	61	off
AuftragsPro.Versand	Delivery notes, labels	17,900	44	off
AuftragsPro.Stammdaten	Customers, articles, prices	19,300	58	off
AuftragsPro.Schnittstellen	DATEV, EDI, Outlook	12,700	27	on
AuftragsPro.Berichte	Crystal Reports integration	8,900	22	on
AuftragsPro.Common	Utilities, data access	7,200	12	on
Total		186,000	412	6 of 9 off

Metrics

METRIC	VALUE	ASSESSMENT
Business logic in forms	approx. 60%	makes testing and reuse difficult
Duplicated code	14%	below 5% would be usual
Concatenated SQL statements	312 places	SQL injection risk, hard to maintain
Automated tests	none	changes are risky
Empty error handlers (empty Catch)	147	errors go unnoticed
TODO/HACK comments	231	signs of known problem areas
Probably unused code	approx. 9%	can be dropped before a migration

4 Database analysis

The data model is fundamentally sound and easy to understand. Over the years, however, inconsistencies have crept in, and important business rules – above all pricing and discount logic – live entirely in 14 stored procedures.

Tables / views	214 / 23
Stored procedures / triggers	96 / 18
Foreign keys	171 of 286 business relations (60%)
Database size	38 GB
Business rules in stored procedures	approx. 35%

LARGEST TABLES	ROWS	SIZE
Booking log	48 m	14.0 GB
Documents (PDFs in the database)	38,000	8.7 GB
Order lines	9.2 m	6.1 GB
Stock movements	7.8 m	4.9 GB

Data quality

- approx. 6% duplicate customer records (1,140 of 19,000)
- 2,300 orders without a valid customer reference (orphaned records)
- Two different collations in one database – the cause of sporadic search errors
- PDF documents stored in the database significantly enlarge backup and restore

5 IT security

CRITICAL	SQL Server 2012 and Windows Server 2012 R2 without security updates (end of support 07/2022 and 10/2023).
CRITICAL	All clients use the sa account; password in plain text in App.config on 45 machines.
HIGH	Database connection not encrypted (TLS not enforced).
HIGH	EDI exchange with suppliers over unencrypted FTP.
MEDIUM	312 places with concatenated SQL statements (SQL injection); reachable internally only.
MEDIUM	Changes to prices and conditions are not logged.
LOW	Third-party components without vendor updates for years.

6 Dependencies and licences

COMPONENT	VERSION	STATUS	ACTION
.NET Framework	4.8	maintained, no further development	Migrate to .NET 10 (LTS)
VB.NET	–	no new language features	AI-assisted conversion to C#
Windows Forms	–	also supported on .NET 10	keep
DevExpress WinForms	14.1 (2014)	outdated, not .NET 10 compatible	update (licence) or standard controls
Crystal Reports for VS	13.0	.NET Framework only	migrate 38 reports
Label printing component	3.2 (COM)	vendor no longer exists; forces 32-bit	direct printing (ZPL)
Enterprise Library Data Access	5.0	discontinued	replace with Dapper
SQL Server	2012 SP4	support ended 07/2022	SQL Server 2022
Windows Server	2012 R2	support ended 10/2023	Windows Server 2025

7 Operations and infrastructure

- Deployment via ClickOnce from a file share – works, but without version control of releases
- Nightly full backup to a NAS; a restore has never been tested
- No monitoring; errors are reported by phone
- Build only possible with Visual Studio 2015 on a single notebook; source code in SVN

8 Knowledge and documentation

- Only documentation: a Word document from 2011 (12 pages), largely outdated
- An estimated 140 business rules, of which approx. 20 are documented
- Two key users know the processes very well – an important source for the documentation
- The external freelancer knows only parts of the application (interfaces, reports)

9 Traffic-light rating

Valuable for the business, technically at acute risk

AuftragsPro reflects Muster Metallbau GmbH's processes very well – the special costing in particular is a real competitive advantage. Technically, however, action is urgently needed: the database platform no longer receives security updates, database access uses administrator rights, and knowledge of the application largely left with the former developer. A complete rewrite is not necessary: the business logic can be preserved and technically modernised.

AREA	RATING	REASON
IT security	● Red	Database server without security updates; access via the sa account with a plain-text password; 312 places with concatenated SQL.
Operations & infrastructure	● Red	Unsupported server platform; restore from backup never tested; build only reproducible on one notebook.
Knowledge & documentation	● Red	Main developer retired; documentation from 2011; only approx. 20 of an estimated 140 business rules documented.
Maintainability & code quality	● Amber	About 60% of business logic in forms; 14% duplicated code; Option Strict off in 6 of 9 projects; no tests.
Technology outlook	● Amber	.NET Framework 4.8 is maintained but no longer developed; VB.NET gets no new language features; third-party components outdated.
Database & data	● Amber	Sound data model, but 40% of relations without foreign keys and approx. 6% duplicate customer records.
Business fit	● Green	Covers the processes very well; high user acceptance; special costing as a competitive advantage.

10 The five biggest risks

NO.	RISK	RATING	ACTION
R1	Database server without security updates SQL Server 2012 (end of support 07/2022) and Windows Server 2012 R2 (end of support 10/2023) no longer receive security updates.	CRITICAL	Migrate to SQL Server 2022 and Windows Server 2025.
R2	Database access with administrator rights All 45 clients connect with the sa account; the password is stored in plain text in the configuration file.	CRITICAL	Dedicated service account with minimal rights, remove the password from the configuration.
R3	Knowledge monopoly Business rules are spread across form code and stored procedures and are barely documented.	HIGH	Document core processes and business rules (arc42), hand knowledge over to the team.
R4	Build not reproducible The application can only be built on a single developer notebook with Visual Studio 2015.	HIGH	Move to Git, automated build pipeline.
R5	Backup untested The nightly backup has never been restored; there is no emergency procedure.	HIGH	Restore test, documented emergency procedure.

11 Options in detail

Effort and duration estimated without AI. Our AI-assisted development reduces time and cost by the range shown; the roadmap already includes AI.

A · Stabilise and keep running

Without AI: **35–45 PD · 2–3 months** · Saving with AI: **20–30%** · Assessment: **Essential as an immediate step, not sufficient alone**

Immediate security measures, platform update, secure build and backup; the code stays unchanged.

Advantages

- + Low effort, quick impact
- + Removes the critical risks

Disadvantages

- Technical debt remains
- Buys only approx. 2–3 years

B · Modernise the technology recommended

Without AI: **430–570 PD · 15–20 months** · Saving with AI: **60–80%** · Assessment: **Recommended (after option A)**

Migration to .NET 10 (LTS), AI-assisted conversion from VB.NET to C#, tests for core processes, renewed reports and third-party components; business logic and user interface stay the same.

Advantages

- + Valuable business logic is preserved
- + Future-proof, supported technology
- + Automated tests as a safety net

Disadvantages

- Remains a desktop application
- Medium effort

C · Step-by-step replacement with a web application

Without AI: **620–800 PD · 24–36 months** · Saving with AI: **50–60%** · Assessment: **Sensible perspective for parts, not as a whole**

New browser-based application, module by module using the strangler fig pattern; parallel operation with AuftragsPro.

Advantages

- + Modern, browser-based, mobile-friendly
- + Best basis for field sales and a customer portal

Disadvantages

- Highest effort
- Longer parallel operation

D · Introduce standard software (ERP)

Without AI: **high (plus licences) · 11–19 months** · Saving with AI: **approx. 20%** · Assessment: **Not recommended**

Replacement by an industry-standard ERP system with customisation.

Advantages

- + Vendor maintenance and updates

Disadvantages

- Covers only approx. 70% of functions
- Special costing cannot be mapped
- Ongoing licence costs

12 Recommendation and roadmap

We recommend first removing the critical risks (option A) and then modernising AuftragsPro technically (option B). This preserves the valuable business logic and puts the application back on a secure, supported foundation. A web interface for field sales can then be added step by step (part of option C).

PHASE	TIMEFRAME	CONTENT	EFFORT
Phase 1: Immediate measures	Months 1–2	Migrate the database server, service account instead of sa, restore test, Git and build pipeline	25–35 PD
Phase 2: Modernisation	Months 3–9	.NET 10 and C#, tests for core processes, migrate 38 reports, renew third-party components, documentation	130–170 PD
Phase 3: Field sales web module (optional)	From month 10	Quotes and order status in the browser, step by step	60–80 PD

Phases 1 and 2 combined: 155–205 PD with AI-assisted implementation – without AI it would be approx. 465–615 PD.
Estimate accuracy ±25%.

Next steps

1. Discuss the results with management and IT
2. Commission phase 1 (immediate measures) – ideally within the next 4 weeks
3. In parallel: document core processes and business rules
4. Detailed planning and fixed-price proposal for phase 2

13 Glossary

PD	Person-day (8 hours)
LTS	Long Term Support – a version with long vendor support
Strangler fig pattern	Step-by-step replacement: new modules gradually take over functions of the old system
Option Strict	VB.NET setting for strict type checking; when off, errors only appear at runtime
Stored procedure	A program stored in the database

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