



Technical Due Diligence Report – THX1138 Inc.

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1. Detailed Technical Risk Report

Summary of Findings

Area	Risk Level	Key Issues Identified
Code Quality	High	Poor modularity, code duplication, inconsistent style
Security	High	Insecure password storage, no encryption for sensitive data
Architecture	Medium	Monolithic backend limits scalability
DevOps	Medium	No CI/CD, manual deployments prone to error
Testing	High	<20% test coverage, no automated integration tests
Team	Medium	Limited experience with scaling production systems

2. Architecture Recommendations

1. **Backend Refactoring:**
2. Modularize key services (auth, payments, notifications) to prepare for future scalability and faster deployments.
3. **Move to Event-Driven Architecture:**
4. Introduce messaging (e.g., RabbitMQ or Kafka) to decouple tightly integrated components.
5. **Database Optimization:**
6. Normalize schema, index frequently queried fields, and implement read replicas.
7. **Introduce API Gateway:**
8. For better observability, rate limiting, and service abstraction.

3. 👥 Team Augmentation Suggestions

Gap	Identified Recommendation
No DevOps specialist	Hire part-time DevOps consultant
Backend scaling experience	Add senior backend engineer (contract)
Security best practices	Bring in security advisor for 2-month audit
QA automation missing	Hire QA automation engineer (freelance)

4. 💰 Cost Estimates for Remediation

Issue Identified	Recommended Action	Estimated Cost (USD)	Notes
Poor code structure in backend	Refactor backend codebase	\$25,000	Approx. 250 developer hours
Insecure authentication mechanism	Implement OAuth 2.0 + penetration testing	\$12,000	Includes security audit
Inflexible monolithic architecture	Modularize into microservices	\$30,000	Prioritized for scalability
Outdated frontend tech stack	Migrate to React + modern toolchain	\$18,000	Training included
No CI/CD pipeline	Set up GitHub Actions & deployment flows	\$6,000	Reduces release risk
Weak testing coverage (<20%)	Increase to 80% unit/integration coverage	\$10,000	Automated test suite development
DevOps and QA staffing	Contract hires (DevOps + QA automation)	\$15,000	3-month engagement

✅ **Total Estimated Remediation Cost: \$116,000**

Final Notes

Despite notable technical debt and security concerns, the engineering team appears coachable and the core product shows strong market fit. With the recommended interventions, this startup can be brought to a scalable, secure baseline in ~3–4 months.