

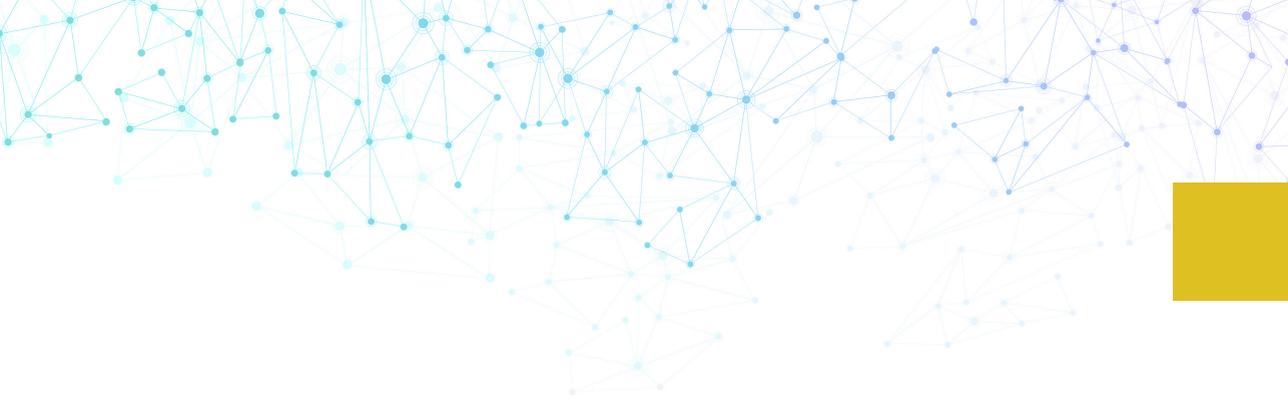
M&A IT Due Diligence

// 5 Areas of Greatest Risk Mitigated
by Analyzing the Source Code



Nicholas Potts

SI Software
Improvement
Group



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by Analyzing the Source Code

Author

Nicholas Potts

Growth Marketing Manager at Software Improvement Group (SIG)

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Change Business to Compete in the Digital World

Globally there is an acceleration in the digitization and virtualization of business. Industries are responding to this change in demand by rapidly transforming their business to compete in the digital world. 2021 will be the biggest year for global mergers and acquisitions, with a 133 percent increase in the technology sector . Companies are reliant upon M&A as a strategy to accelerate transformation. Ensuring there is no uncontrollable risk, a comprehensive review of the underlying IT and source code will provide complete transparency.

Acquiring high-value IT assets comes at the risk of assuming unwanted technical debt and hidden security vulnerabilities. Performing documentation reviews and technical interviews are not enough. M&A teams need to dive deep into the source code, which unfortunately is not yet common practice. By analyzing underlying digital assets, buyers can identify and quantify hidden investment risks and opportunities. Buyers are at risk when they invest in a black box and can find out too late when an investment doesn't support strategic goals for efficient execution or scalable growth.

Can a buyer review software quality and protect the seller's intellectual property?

Yes! The buyer and the seller can agree to put the source code in an escrow and employ an independent third party experienced in analyzing software to an internationally accepted standard. A software analysis-driven approach can provide an unbiased and fact-based assessment of a custom application or an entire IT portfolio. Sell-side can resolve issues in advance of buyer involvement, resulting in a streamlined acquisition and often a higher valuation. Buy-side can identify current and future risks or opportunities that can impact the business in a secure environment providing insightful context to some of the most critical questions:

- Does the technology support your future growth plans? Are any expensive investments necessary? Can it be easily integrated into a new IT landscape?
- What are the projected maintenance costs? Can it be easily adapted?
- How will the application perform with more users or data? Will it be able to scale and support future growth and business objectives?
- Are the IT systems secure? Are there any IP-related issues in the source code?
- How strong is the IT Team? How complex is the IT environment? What is the capacity for innovation? Does that delay time-to-market?

1.

Growth Capability

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Early-stage businesses typically enter the market with a minimal viable product. Once the customer base starts growing, software development teams prioritize new functionality and features. Scalability is often overlooked and is a bottleneck that directly impacts productivity, efficiency, and profitability.

RISK

BUSINESS IMPACT & COSTS

Scalability

Poor scalability limits the number of clients that can be served. Expensive investments in hardware, software, additional developers, or a re-architecture are necessary to service an increasing client base.

Scalability Empowers Businesses To Achieve Their Full Growth Potential

- Does the target technology support (or hinder) your future growth plans?
- Can it scale and handle more users?
- Will performance decrease with more data?
- Can it adapt to new platforms and integrate with other solutions?
- Are substantial changes needed? At what cost? How long will it take?

When investing in technology a seamless user experience is only a superficial examination and not indicative of reliability. Businesses can be adversely affected if software scalability is not implemented from the very beginning.

At any given time, poor scalability will limit the volume of clients the software can serve. Unexpected errors impact user experience, performance deteriorates, and aging software is vulnerable to new and emerging security threats. Lack of scalability introduces bottlenecks and becomes increasingly costly, costing businesses millions in revenue.

Scalability offers the business flexibility and can seize upon critical opportunities. With changes in demand, it can grow or shrink. Good hardware infrastructure coupled with high software quality and cloud accessibility provides the foundation to support growth and allow businesses to pivot in times of uncertainty. Organizations are free to innovate and gain a competitive edge.

2.

Innovation Capacity

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Software development teams who code under pressure in an environment where functionality is the priority typically overlook maintainability. As the code base grows, so too does the cost of software maintenance. Future developments are more challenging and complex and are a formidable challenge to remaining competitive.

RISK

BUSINESS IMPACT & COSTS

Maintainability A poorly engineered software system is expensive to maintain and leads to hefty future investments. New features become increasingly difficult to deploy, poor maintainability directly impacts future competitiveness.

Maintainability Accelerates Competitiveness

- Can new developers understand the code easily?
- Can the system be easily adapted to meet future demands?
- What is the risk that maintenance costs will increase?
- Will this adversely impact 'time to market'?
- Are we reducing or increasing our technical debt?

Valuations should factor in system volume to accurately measure the time required to develop the same IT assets from the ground up. Organizations that disregard software quality and maintenance will predictably drain developer resources as future costs spiral out of control.

Businesses that don't take a quality-centric approach risk system instability that can unpredictably impact future releases. Companies are unable to ascertain whether their systems will meet future demand. As the number of lines of code increases, so does the complexity, making future modifications more challenging. Systems that are well maintained free up the workforce to work on new functions and accelerate the time to market. The technical quality of the software is an accurate predictor of risk for the future. Good maintainability enables companies to be more nimble and remain competitive in fast-paced environments.

3.

Architectural Agility

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Sprawling applications, code complexity, and developer efficacy largely contribute to IT latency and performance degradation. Lack of governance and code discipline lowers software quality impeding performance. The appropriate Software Architecture facilitates infrastructure elasticity and high performance. Architectural antipatterns can also significantly impact a team to work on code independently and efficiently.

RISK

Performance

BUSINESS IMPACT & COSTS

Users may experience poor performance with high response times. This leads to dissatisfied clients, making them less productive and unlikely to buy more.

Productivity Impacts Client Satisfaction

- What systems are of greatest importance?
- Where is performance most critical?
- How do future growth plans impact the IT portfolio?
- Where is the software quality low and how should we prioritize our efforts?

The different systems that make up an IT portfolio are not all equal in value. IT assets differ widely in quality and can result in imminent failure or long-term success. Additionally, technology that does its job now but cannot be adapted efficiently to support future requirements is a liability. An audit of software should align with strategic goals and growth plans.

Software optimization is fundamental for any critical application that downgrades productivity, lowers customer satisfaction, and hurts businesses financially. Slow performance creates an environment where employees find workarounds that make organizations liable and give competitors the advantage.

Good software quality and well-designed architecture are the foundation blocks for high performance. Understanding the technology risk profile within a strategic context quantifies the amount of technical debt a buyer will inherit. High-performance systems deliver an exceptional customer experience and empower businesses to respond quickly to client demands.

Security Mitigation

Organizations understand the importance of application and information security, yet start-ups to well-established companies are slow to adopt high standards. When development teams incorporate security by design, it becomes a hundred times less expensive than testing after the fact. Security isn't easy, but a resilient system prevents errors, reduces costs overall, and mitigates risks.

RISK

Security

BUSINESS IMPACT & COSTS

Technology can leave you vulnerable to being hacked. Breaches damage your reputation and financially impact your company.

Security by Design Prevents Threats & Mitigates Vulnerabilities

- What personally identifiable information (PII) is stored? How is it protected?
- What systems and activities are being logged and monitored?
- Handshakes hardcoded? Is data transfer encrypted?
- What open source libraries are being used? Are they up-to-date? Licensing?

Reviewing operation security like multi-factor authentication and password policies will provide limited insight into wider vulnerabilities. Typically information systems are not built with security and privacy in mind. Businesses that end up in the headlines risk significant disruption, client claims, and hefty fines.

If security practices aren't in place from the very beginning then failure is inevitable. Not all security issues are equal in severity.

However, the longer they go undetected, applications will be vulnerable to attacks, can malfunction, or become unstable.

Companies are unknowingly sitting on a ticking time bomb that can dramatically impact the bottom line.

Businesses that have in place a continuous improvement program are better protected against security incidents. Client satisfaction directly correlates with the efficacy of a security assurance framework. Good technology choices, paired with a culture that values security and privacy, reduce churn, reduce costs, and vastly mitigate risks.

Resilience Continuity

Software products start small and, as development continues, it grows more complex. Teams forgo future-proofing the architecture or best practices to complete the next sprint. Short-sightedness erodes the quality and the lifespan of IT assets. Additionally, in systems with high volumes of transactions, inefficient code can increase energy costs. Sustainability is a balance of speed and agility versus scalable design decisions.

RISK

Sustainability

BUSINESS IMPACT & COSTS

Outdated technology may lead to large investments and an extended period of slow development, increasing time-to-market. And, while the focus is on re-building technology, no new capabilities, or features can be built.

Sustainability Secures a Stable Future

- Is the technology used future proof, or is it based on outdated languages and concepts?
- What's the cost of ownership? Can we optimize the cost to value ratio?

- How much effort is required for support and maintenance?
- What is the future lifespan?

Software built today must be able to scale to meet the demands of tomorrow. Enterprise systems tend to last a lot longer than planned. Software built to last is continuously evaluated at a code, architectural, and portfolio level.

Past technology choices and outdated practices will continue to degrade performance. Inefficient coding can significantly impact energy consumption and impede maintenance. New sprints deliver ever-decreasing amounts of value. Surgical replacements or huge re-architectural efforts are overdue, holding back the delivery of future developments.

Good sustainability practice increases the lifetime of IT assets, reflects high-quality software development, good technology choices, and well-implemented architecture. Contextual technical analysis can reveal the future life span of software, whether that is ten years or ten months. Sustainability can hugely impact the value of IT assets and their strategic role as part of a merger or acquisition.

6.

Look At The Codebase

Only a thorough technical analysis of all the applications and an assessment of development practices will identify hidden IT-related risks and opportunities.

There is a high level of complexity within IT, and this requires rigorous IT Due Diligence (IT DD). An IT DD should investigate qualitative and quantitative components and report how the software will affect strategic goals and growth.

Investors should understand the target's technology risk profile that evaluates the core systems and supporting technologies. Fact-based analysis should clarify the quality of the software with projected maintenance and improvement costs.

7. **Post Merger Integration**

IT Due Diligence is just the very start of the value creation journey. Early identification of potential bottlenecks is imperative for a successful Post Merger Integration (PMI) or value creation.

Leadership can use calibrated financial estimation models for maintenance, repair, and continued development to the overall business plan. IT specialists can know upfront how many person-months of work will be required to address newly inherited technical debt. Businesses that use a software assurance platform can get insight into everything from CAPEX to OPEX projections - cutting cost, speeding up time to market, and accelerating growth.

About the Author

Nicholas Potts is Growth Marketing Manager at Software Improvement Group, where he brings 10 years of experience helping tech companies grow. Before SIG, he worked at several startups on the cutting edge of innovation, using artificial intelligence to disrupt the status quo.

About SIG

Software Improvement Group (SIG) helps organizations trust the technology they depend on. We've made it our mission to get software right for a healthier digital world by combining our intelligent technology with our human expertise to dig deep into the build quality of enterprise software and architecture - measuring, monitoring, and benchmarking it against the world's largest software analysis database.

With SIG software assurance, organizations can surface the factors driving software total cost of ownership and make fact-based decisions to cut costs, reduce risk, speed time to market, and accelerate digital transformation.

Our SIG software analysis laboratory is the only one in the world accredited according to ISO/IEC 17025 for software quality analysis. We make this lab accessible to our clients through our SaaS software assurance platform – Sigrid – which enables them to take a risk-based approach to improving the health of their IT landscapes.

We serve clients spanning the globe in every industry, including DHL, Philips, ING, KLM, BTPN, Weltbild, KPN, as well as leading European governmental organizations.

SIG was founded in 2000 as an independent technology company with embedded consulting services. SIG is headquartered in Amsterdam, with offices in New York, Copenhagen, Antwerp and Frankfurt.

Learn more at www.softwareimprovementgroup.com.



Fred. Roeskestraat 115
1076 EE Amsterdam
The Netherlands

www.softwareimprovementgroup.com
marketing@softwareimprovementgroup.com

Getting software right for a healthier digital world