

# The Value of IT Due Diligence

Investing with confidence in a digital world

## Introduction

# Investing with confidence in a digital world

When acquiring a company, or making a strategic investment in one, how do you get a handle on the associated technology risks? Legal and financial due diligence is not enough. To invest with confidence in a digital world, investors need a rigorous, cost-effective methodology to determine that key technology is future-proof.

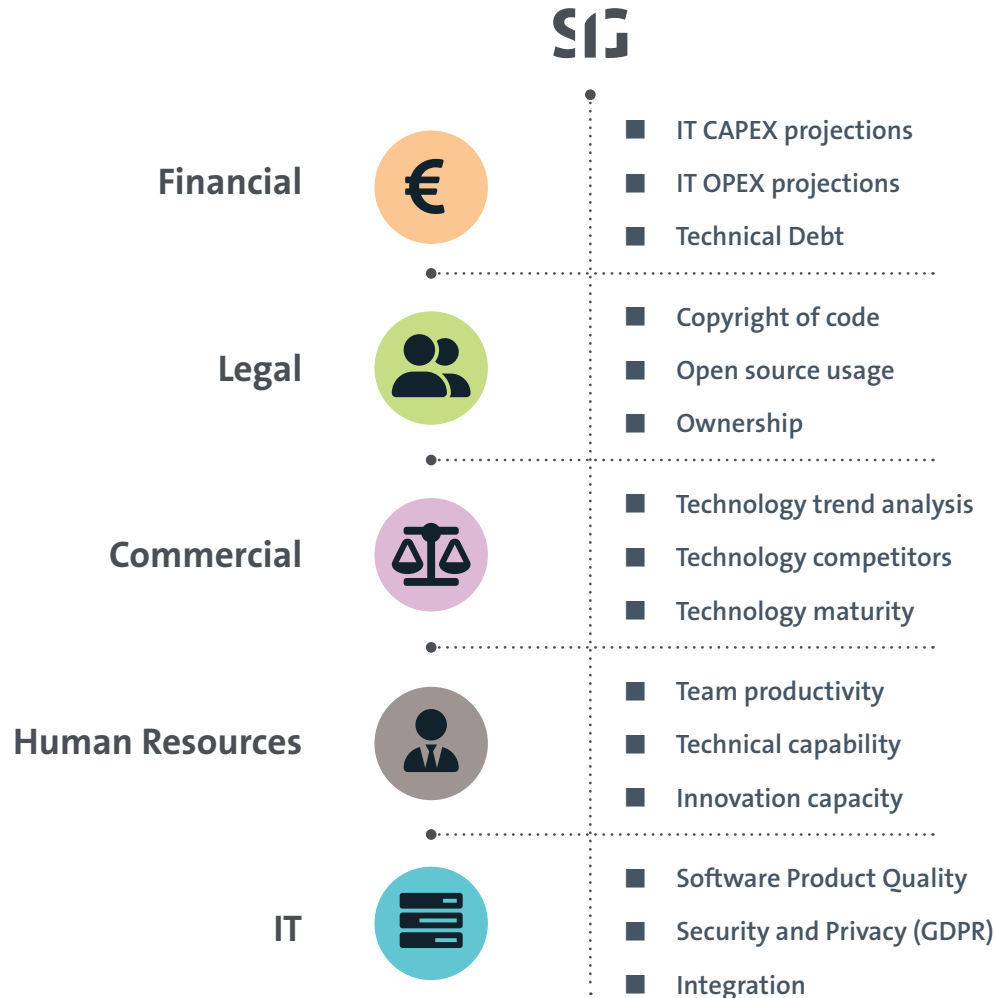
In this article, we outline the essential components of IT Due Diligence, based on our advisory experience in supporting more than 50 transactions on three continents with deal values up to €500 million. Now, we have done more than 200 IT Due Diligences over the last few years.

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In a digital world, any due diligence needs to include a rigorous, cost-effective investigation of IT risks, covering inherent software quality, exposure to dependencies on third-party components, security and privacy properties, and future scalability.



## The limitations of standard Due Diligence

The success of investments is based on superior knowledge—having more information than others, and assessing the meaning of that information more accurately. The more relevant knowledge an investor has on a potential investment, the more likely the investment is to succeed. That’s why investors spend ample time on due diligence, ensuring that no skeletons are hidden in the closet and all assets are accurately valued.

When investors are considering an acquisition, lawyers review contracts, investigate possible patent infringements, and perform necessary legal reviews. Financial auditors review the books and ensure that the stated numbers are trustworthy. In parallel, other analysts spend significant time evaluating HR, strategic reviews, and market reconnaissance.

But these traditional measures must be deployed alongside IT due diligence. In today’s digital world, every part of a company has a technology aspect as well, and IT is therefore a crucial business differentiator. With rising stakes, tech investors are increasingly professionalizing their decision making regarding transactions and value creation, a process that includes close evaluation of an acquisition target’s technical merits. Rigorous yet cost-effective IT due diligence that leverages automated analysis capabilities is key.

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much to investigate.**

## Where are the digital skeletons hiding?

Yet, it is surprising how often the value of IT is not assessed with similar diligence. Perhaps a demo of the software will be requested to get an impression of how it works. Perhaps a former CTO will be tasked to interview a few key people and “have a look” at the technology stack. But the effort typically stops there—which is a mistake.

Even with a commitment to going deeper, it is difficult to get a good look under the hood, because IT is a complex field that is often not fully understood even by those who created it. Unless you perform a thorough inspection driven by a rigorous methodology, technology risks are bound to remain hidden. This applies far beyond technology firms that sell software or other technology solutions. In our digitized society, every business for potential investment relies on IT.

## The fundamental challenge of IT Due Diligence

For most acquisitions, there is little time to work, but much to investigate.

The specific challenge may arise from a complex software product developed over many years. Or it might come from embedded firmware in a legacy product. Or it could be an extensively customized ERP system that will require expensive upgrading. It may even be a complicated app developed to drive sales. Wherever the technology challenges are hiding, you need to dig into them properly. It is not enough for a piece of technology to look fancy in a demo. Is it scalable? Is it secure? How easy is it to maintain?

More importantly . . . how will you know? You don’t have the time or the money to spend months investigating it yourself. You probably also don’t have the expertise on your staff. And yet you still need to know. The knowledge you’re missing about the target company’s IT could make the difference between success and failure.

# What do you need to look for?

IT due diligence should focus on a few major areas of risk. Before you tackle thousands or millions of lines of code across many disparate systems, you need to understand what you're trying to find out.

## RISK AREAS

## BUSINESS IMPACT & COSTS

### Scalability

Poor scalability may limit the amounts of clients that can be served. Larger amounts of clients may only be served with expensive investments in hardware or re-architecting.

### Maintainability

A poorly engineered software system is expensive to maintain. This leads to additional future investments. It also means it is more difficult and expensive to add additional features. This will impact the future competitiveness.

### Performance

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

### Security

The technology could be hacked into, leaving your company and clients vulnerable. This may lead to loss of work, claims and settlements, as well as reputational damage. In case of vulnerability to ransomware, it may lead to loss of work and financial damage. Sales may be hampered as clients demand security assurance.

### Sustainability

Is the technology used future proof, or is it based on outdated languages and concepts? This may lead to (large) future investments, and an extended period of slow or no development, increasing time-to-market. And while focus is on re-building technology no new capabilities and features can be built.

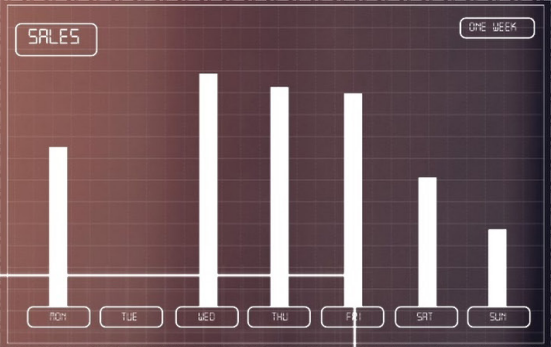
## How can it be done?

So how can rigorous IT due diligence be conducted in limited time, with limited cost, yet with sufficient depth and coverage?

Clearly, the solution isn't to throw more bodies at the process. That approach can actually work in legal and financial due diligence, when bringing in an army of specialists can reduce the time required. A similar approach in IT due diligence is simply not feasible because the size and complexity of a typical technology stack are prohibitive for any human observer to inspect and understand in depth. Trying to do that would require too much time and cost too much.

Instead, technology itself must be a key ingredient for successful IT due diligence. A small team of experienced analysts, equipped with the right software tools to analyze your investment target's technology stack, can dig out and quantify IT risks efficiently and effectively. The only viable option is a technology-based approach.







# Key analysis capabilities

So what technology can be leveraged to analyze IT assets? Software engineers have always supercharged their work using automated tools—from compilers and code generators to debuggers and security scanners. SIG leverages the same technology that underpins those tools to support its IT due diligence methods with powerful analysis capabilities. Let's consider each task along the way.

## **Determine technology mix:**

Going far beyond the obvious main technologies used in an IT environment, SIG uses software analysis tools to identify the myriad auxiliary technologies in use, such as deployment scripts, test frameworks, third-party components, and front-end libraries. Each of these supporting technologies is evaluated for known risks. For example, are they current mainstream technology, deprecated, or bleeding-edge? Can they be maintained by any experienced programmer or do they call for a rare specialist?

**Deliverable:** A technology risk profile of the target software

## **Quantify volume:**

How much software are you buying? The quantity of IT assets to be acquired must be factored into their valuation. A good measure of volume is the rebuild effort, i.e. the person-months of work theoretically required to develop the same IT assets from scratch by an average team of software developers. SIG evaluates this using technical volume metrics such as lines of code combined with industry-average productivity statistics.

**Deliverable:** A rebuild effort estimation quantified in both monetary value and time

**Benchmark quality:**

More software does not always represent more value. In fact, IT assets differ widely in quality, which could mean the difference between imminent failure or long-term success. Technology that does its job now but cannot be adapted efficiently to support future requirements should be deemed a liability rather than an asset. Based on minute analysis of programming code by automated tools, SIG rates your technology against industry-relevant quality criteria.

**Deliverable:** A benchmark of your software against its volume and technology class

**Reconstruct the architecture:**

The architecture, or overall technical design, of your IT portfolio is not visible from the outside; beyond that, the real-world architecture may differ substantially from the idealized version in your documentation. SIG uses analysis tools to reconstruct the current architecture from the IT assets themselves to provide an accurate picture of the actual situation. This is an essential input for identifying risks and estimating mitigation costs. Post-transaction, the analysis becomes an invaluable basis for maintenance, development, and integration activities on the acquired software.

**Deliverable:** A reconstructed architecture of your IT portfolio

**Assess adaptability, scalability, and ability to integrate:**

As a business grows and changes, its IT assets must be adapted and improved. SIG uses automated technical analysis to clarify future adaptability, as well as the feasibility and cost of scaling to handle more transactions and users, or for integration into existing technology landscapes.

**Deliverable:** A situational analysis that provides a factual basis for understanding future growth

**Estimate future costs:**

Using data from measurement programs across various industries, SIG has created and calibrated financial estimation models for maintenance, repair, and continued development. These allow quantification of the parameters of which additional investments will be needed for future maintenance, repair, and development.

**Deliverable:** A post-transaction roadmap that allows the IT investment to be considered in the context of the overall business plan

**Estimate life expectancy and overall value:**

The lifetime of IT assets is potentially unlimited. This is the case for high-quality software developed with modern technologies that follow best practices of development. More often, however, past technology choices plus ongoing quality erosion dictate that surgical replacements will be necessary at some point. Based on technical analysis and contextual factors, SIG estimates the future lifespan of the target software. Whether this is 10 years or 10 months makes a big difference for proper valuation of IT assets.

**Deliverable:** A life-expectancy estimate of IT assets

*Drawing on automated analysis tooling and its strong IT expertise, SIG leverages these analysis capabilities to perform fast, accurate due diligence on IT assets of any complexity and volume.*



# The benefits of an IT Due Diligence engagement

At SIG, we have harnessed these analysis capabilities in a software analysis tool suite that covers upward of 280+ technologies. During IT due diligence engagements, our analysts operate the tool suite to generate the required data for a comprehensive quality and risk assessment. Findings are validated, aggregated, and compiled into a concise report that quantifies all identified risks in financial terms.

Drawing from its vast experience in the field, SIG offers fast and focused IT due diligence that fits within the tight timelines of PE firms and strategic buyers. Findings are to-the-point, with clear action items and dollar values underpinned by scientific research. Clients specifically report the following benefits:

- Ability to negotiate substantial discounts
- Anticipation of additional future costs
- Identification of risks and ability to take timely mitigating actions
- Insight for the future management team into software architecture and quality

In rare cases, our IT due diligence investigations have led to the cancellation of the intended transaction, thus saving the investor from making a very costly investment mistake.



- Technology risk profile
- Quality rating and benchmark
- Reconstructed architecture
- Situational analysis
- Post-transaction roadmap
- Life expectancy and valuation

# Transactions supported by SIG

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# About Software Improvement Group

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](http://www.softwareimprovementgroup.com)



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