

The Hidden Causes of Digital Investment Failures

Organizations expect to get value from investments in technology, but most struggle to achieve their ambitions. Despite the long history of digital projects, the success rate does not seem to have improved. There is no shortage of prescriptions for how to manage projects and what needs to happen for expected outcomes to be achieved. Our research, which has studied hundreds of projects, reveals that the root causes of failing or underachieving digital projects are subtle, hidden and surprising.^{1,2}

Joe Peppard

University College Dublin (Ireland)

R. M. Bastien

rmbastien.com (Canada)

Distinguishing Between Symptoms and Root Causes

Anybody who has suffered from sciatica will know that, despite experiencing searing pain and tightness in the hamstring muscle at the back of the leg, which can seriously hinder movement and exercise, the cause of this problem is a spinal disc bulge in the lower back region. This bulge irritates the sciatic nerve, and the pain that is felt is actually referred pain resulting from inflammation. The tight hamstring is just a symptom. To the uninitiated, the natural response is to stretch and treat this muscle and, while this might provide some immediate relief, unless the root cause is tackled, the problem will persist and eventually become chronic. In our work with organizations seeking to improve the outcomes from their IT investments, we see a similar phenomenon occurring: organizations address the symptoms arising from their poor record with IT projects but the situation persists.

There is no shortage of prescriptions on how to manage IT projects and what needs to happen for expected outcomes to be achieved. Even so, the statistics on success rates are abysmal.³ Why is this? Many suggest that the “knowing-doing” gap is a key reason; that is, we know how to do projects right but this advice is just not followed. And when we review project failures, we can identify well-known practices that, had they been adopted, would have had a positive impact on the result. But even in situations where recommendations have been



¹ Blake Ives is the accepting senior editor for this article.

² The authors would like to thank Blake Ives, Warren McFarlan and an anonymous reviewer for their comments, suggestions and guidance through the review process.

³ In the 1980s, economist Robert Solow described the productivity paradox where “you can see the computer age everywhere but in the productivity statistics.” See Solow, R. M. “We’d Better Watch Out,” *New York Times Book Review* (36), 12 July 1987, p. 36. See also Strassman, P. A. *The Business Value of Computers: An Executive’s Guide*, The Information Economic Press, 1990. For a summary of some infamous large IT investment failures, see Fruhlinger, J., Sayer, P. and Wailgum, T. “12 Famous ERP Disasters, Dustups And Disappointments,” CIO, November 7, 2022, available at <https://www.cio.com/article/278677/enterprise-resource-planning-10-famous-erp-disasters-dustups-and-disappointments.html>.

Introduction to the Illustrative Case⁴

For a major North American property and casualty insurance company, continuously adapting its multiple antiquated policy management systems (PMSs) to changing market conditions was slow, frustrating and costly. Eventually, the company decided to bite the bullet regarding the poor state of its applications portfolio and to merge data from the various PMSs inherited from past merger activity and create a new, unified platform. In the insurance business, profitability primarily depends on selecting the right risks (or refusing them) and determining the right premium. With these processes embedded and automated within a PMS, the company decided to build the new platform internally to fully control the underwriting process and to leverage its long experience and expertise in the market; they saw this as providing a distinct competitive advantage. The new platform would use a modern, modular, service-oriented architecture that would promote business agility and enable future growth. The plan was to build great customer experience on top of this architecture, enabling customer self-service and improving the engagement process in both B2B and B2C markets.

A major transformation program was launched, and expectations were high. Given the company's patchy record with IT investments, executives were adamant that they should maintain tight control over all aspects of the program. Recognizing the huge risks of the endeavor, the program was divided into dozens of smaller projects, each with its own objectives, sponsors and budget, as well as program-level governance mechanisms. These projects were to be led by competent and experienced project managers, following a widely adopted project management methodology, which increased the confidence of the company's executive team that this investment would lead to success. Agile development approaches were also to be used, which would result in more frequent delivery, something that greatly appealed to the program's sponsor.

Six years after the program kicked off, more than \$120 million had been spent, yet the company was less than a third of the way through its planned transformation journey, and the revised estimated cost to attain the investment objectives had almost doubled. There also had been a considerable change in personnel on both the business and IT sides, further destabilizing the program. The company's board of directors became apprehensive and asked the executive leadership team to reconsider an off-the-shelf solution—a decision that would see a substantial portion of the investment written off.

followed or pitfalls avoided, projects have still struggled.

In our research (see the Appendix for an overview), we found that, in most cases, failing or underachieving projects are symptoms of a much wider set of causes. The root causes are subtle, hidden and surprising. The underlying reasons for failed projects and wasted investments can likely be traced back to causes outside of the remit of any project manager, project sponsor, project management office or digital transformation office. These hidden causes result in reinforcing a self-fulfilling cycle intended to positively impact project outcomes but, in the end, have the opposite effect.

Five Hidden Causes of Investment Failures

We identified subtle causes that impact project outcomes. Though some of these impacts may be felt immediately, others are unlikely to be

felt until long after the project ends and the new business system goes live. These longer-term impacts can be significant, affecting operational efficiency and agility, and stifling strategic options. We classify these subtle causes under five headings: 1) the illusion of control; 2) the fallacy of the “working system;” 3) conflicts of interest; 4) the IT amnesia syndrome; and 5) managing expenses, not assets. Below, we describe each of these causes and their implications.

First, though, we examine the way in which most organizations approach digital investments. Usually, there is an entity or person, typically an organizational unit, manager or budget holder, who requires some IT to either solve a problem or to support a new opportunity. Someone else in the organization will then build the solution or source the required technology capability from a third party. This “someone else” is usually the same organizational unit responsible for all digital technology-related needs. We refer to this as the *single-counter IT*, also known as the IT

⁴ Throughout the article we use this case as an example from our data set to illustrate the points we are making.

How the Case Study Illustrates the Illusion of Control

At the onset of the PMS re-platforming program, a structure of committees was put in place to provide adequate visibility and steering from the sponsor and business leaders on the chosen strategies, the expected benefits, risks, program status, progress made and issues encountered. In the early days of the project, most of the work was not technical; rather, it was primarily concerned with evaluating strategic options, elaborating the list of wants and needs, and writing and sending requests for information to potential vendors. The early nontechnical work also included the highly convoluted chore of quantifying the business benefits that should result from not having to manage multiple PMSs, and the market growth opportunities stemming from systems flexibility and accelerating the speed of delivery of new products. The technical aspects of the solution were, by default, left to senior managers within the company's IT organization.

As the program progressed to design and development, more than 95% of program funds were consumed by digital teams, resulting in the endeavor shifting toward what was by now being referred to across the company as an IT project. Despite the executive team emphasizing at the outset that this was a business project, not an IT one, all eyes were now focused on the technology teams, and expectations shifted to the timely delivery of the new platform.

Most program team members, which included a considerable number of contractors, had only cursory knowledge of the insurance business; indeed, most knew little about the company. The majority were entirely focused on the technical aspects of the program. Benefits management was neither included in their responsibilities nor part of their core competencies. The team members actively working on the program had very little day-to-day interactions with business-savvy leaders and specialists. While many of the project managers were technically literate, the variety of technologies being deployed meant that there were knowledge gaps in steering committee meetings. Although the governance committee comprised predominantly business-cognizant managers, all the skilled resources involved in the actual delivery were ultimately reporting to the CIO.

department. All technology-related requests must flow through this counter.

On one side is the "customer" and on the other the "supplier." The internal customer (also known as "the business" or the sponsor) will likely have gone through all the financial hoops to demonstrate, at least on paper, that the required investment will deliver benefits and that the business outcomes will exceed the expected cost. This entitles the "customer" to a budget for a project⁵ that now must be executed.

The Illusion of Control

Because customers are funding IT projects, they want to be sure they get what they are paying for. However, the customer won't be building the technical solution—this will be contracted to the single-counter IT unit—but will require control over the expenditure; after all, the customer is accountable for it and will therefore demand some oversight of progress and visibility of any risks. The customer will likely establish a steering committee for this purpose and

determine appropriate reporting metrics. This gives the customer the *illusion* of control over the project but not the *reality*.

The investment will have been made with the best of intentions: to improve some aspect of performance or perhaps to meet a regulatory requirement. However, the benefits really only begin accruing *after* the project has delivered the new digital asset, the requisite organizational changes have been made and the new system has gone live. Project progress metrics will focus on adherence to schedule and resource consumption, essentially tracking time and cost. Risks will also be identified, quantified and mitigated, but these risks are typically focused on the nondelivery of the project and not geared to identifying the risks of no benefits emerging. The perhaps hundreds of decisions being made on a weekly basis during a project will likely be invisible to the investment's sponsor. The illusion of project control spawns a still greater illusion of being in control of expected outcomes.

The situation worsens when nobody is held accountable for what happens after the go-live,

⁵ Though we recognize the difference between projects and programs, we use these labels interchangeably.

How the Case Study Illustrates the Fallacy of the “Working System”

What should have been a major business transformation enabled by the development of a new policy management platform had by now disintegrated into a series of projects, each with a manager, team members and a budget. At one point, the program’s overall budget represented 30% of the company’s technology spend, with several hundred technology experts employed. The relevance of the investment was now out of the equation: it would have risked unveiling something of catastrophic consequences for those working on the program. Additionally, those who were involved in building the new platform had little or no knowledge of the sought-after benefits. Conversely, those who had that knowledge—business executives and senior managers involved in daily operations—were too remote from the program execution and/or their efforts to relate the work performed to business benefits and were “lost in translation.”

Program and project managers reporting to the various governance committees felt strong pressure to report in a manner that showed progress and that they were in control. All projects took more time than initially expected, and project managers had to regularly attend committee meetings to ask for more funding. If additional funding was not forthcoming, features or scope were scaled back, but the net effect of reduced scope on the expected benefits was not understood by any stakeholder. The governance bodies were managing the only thing that was understood by all: costs and schedule.

when “victory” has been declared, the project team has disbanded and the project itself becomes a distant memory. Not going over budget and delivering a system that meets requirements are what matter. We have encountered few organizations where project sponsors have to reappear before an investment committee to demonstrate that expected outcomes have actually been achieved.

The Fallacy of the “Working System”

The single-counter IT model means that all IT requests and requirements are routed through a single point of contact, resulting in suboptimal ways of operating. The IT unit has the laudable objective of supporting the organization in achieving strategic and operational ambitions. It wants to be seen as a business partner, working closely with colleagues across the organization. However sophisticated those relationships may be, most IT units are designated as cost centers. Indeed, much of the budget that an IT department receives is already committed to maintaining the digital assets resulting from prior investments. The cold reality is that the IT unit needs funding to sustain its ongoing work.

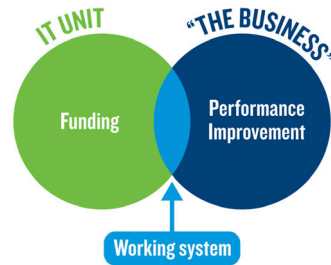
As a consequence, the IT unit rarely has the money to build anything speculatively. Additional funding comes from new investments (i.e., new projects). This allows IT employees to engage with new technologies, to problem solve and to build innovative solutions—the things that make a career in IT so attractive. Money, not technology,

is the real currency of the IT department. It conspires with “the business” to secure this funding. Everybody is happy as long as what is spent does not exceed this amount. Let’s explore what this means in practice.

“The business” is spending money with the IT unit to achieve some new performance improvement. But it also needs to provide money to maintain systems and services resulting from past investment decisions and completed projects. As shown in Figure 1, the overlap between the objectives of the IT unit and those of the business for new investments leads to a tacit agreement that investment will result in the delivery of a working system.

This situation leads to a divergence between what “the business” is looking for from the investment and what it incites the IT unit to do. The IT unit is incentivized to build a working system, the implicit assumption being that this will improve business performance. Measures of project progress focus on delivering this working system. For example, user acceptance testing is carried out to ensure the newly built system meets the specifications. But this focus does not mean that performance improvement is guaranteed. Expected benefits have to be unlocked, and this is achieved by harnessing the capabilities of the newly deployed technology, for

Figure 1: Overlapping IT and Business Investment Objectives Lead to Tacit Agreement to Deliver a Working System



example, to improve productivity or drive new revenue streams.⁶

The combination of a single-counter IT model and project-oriented performance measures leads the IT unit to organize all its activities with the yearly budgeting cycle as its center of gravity. Investment decisions translate into concrete projects, some of which may run for many years into the future. It is taken for granted by the IT unit that if an investment has been approved and a corresponding project launched, there must be some business value to grasp. But the IT unit is not proactively seeking business performance improvements because it is busy delivering a working system. We found that, in the vast majority of organizations, business value is, at best, a secondary concern, with little impact on the day-to-day running of a project. IT teams will change course only if and when requirements coming from business stakeholders are revised.

Consider the impact of the perverse incentives that this dominant funding model promotes, particularly the process for acquiring a budget. In many countries, the public sector has particularly cumbersome processes for investment funding. Because the effort required to get the funding in the first place is so immense, those seeking funding often feel the need to accrue as much budget as possible. This inevitably increases the overall scale and scope of a project, with unavoidably larger risks and a longer implementation timeline.

⁶ See: 1) Peppard, J., Ward J. and Daniels, E. "Managing the Realization of Business Benefits from IT Investments," *MIS Quarterly Executive* (6:1), March 2007, pp. 1-11; and 2) Peppard J. and Ward, J. "Unlocking Sustained Business Value from IT Investments," *California Management Review* (48:1), September 2005, pp. 52-70.

Even in nimbler private-sector enterprises, our observations over decades are that once a budget has been allocated, it will be spent. We are not aware of too many project sponsors returning any funding they fought so hard for. Conversely, many times we have seen important opportunities emerge that are ignored because they had not been included in the budget developed many months earlier.

Field observation shows that IT units are well equipped for seeking funding, tracking its use and delivering working systems, but are not set up to drive improvements in business performance resulting from IT investments. The single-counter IT model pushes technology teams further away from any accountability for the achievement of business value expectations and the project deliverable away from the business requirements.

Conflicts of Interest

On the surface, single-counter IT may look like a good thing. For example, the IT unit can set and ensure adherence to architectural standards or cybersecurity policies. But hidden in single-counter IT is a deeply rooted source of flawed behaviors affecting the execution of digital projects in a way that limits the reaping of benefits from IT investments. The root cause is that too many conflicting responsibilities are funneled to the same group, which leads to serious conflicts of interest.

The most taxing conflict lies in the fact that a single group is responsible for designing *and* building digital business systems. In other mature industries, such as construction, there is a clear demarcation between those designing, those

How the Case Study Illustrates Conflicts of Interest

Although the insurer's executives were ultimately responsible for funding the investment, much of the work was done by IT teams, due to the highly technical nature of replacing existing PMSs with the new platform. Program and project managers, architects, designers, software developers and testers all came directly from the IT arm of the insurance company or were contractors from systems integrators managed by the CIO's organization. When things did not go according to plan, the explanations, answers and alternate courses of action also came from the IT ranks.

When the budget was constrained or additional funding was not forthcoming, workarounds were found, which were unknown to the sponsor. Although several subject matter experts with extensive knowledge of insurance operations were seconded to the program, none understood the consequences of the build-up of "technical debt," nor did they have the knowledge to raise questions. As time progressed, all the sponsor was concerned about was that when finally delivered, the system worked.

building what was architected and the owner—and funder—of the resulting building. As depicted in Figure 2, first the customer commissioning a new building must specify the requirements and provide funding (C in the figure). Second, based on the requirements, the architect defines what has to be built in a way the customer understands (A in the figure). Finally, the builder constructs what was designed, ensuring compliance with relevant codes and regulations (B in the figure).

In the construction industry, these different roles and their accountabilities are never improvised, reinvented or ignored: they are even codified in civil legislation. The roles are understood by all stakeholders. No one can make decisions on behalf of another unless they are willing to assume the related accountabilities. Each role is independent of the others.

With the single-counter IT model, the equivalents of the construction industry roles are mingled in such a way that the identity of the customer, the designer or the builder is either not clear or subject to major variations. In the vast majority of cases we've observed, though responsibilities may be defined, the accompanying accountabilities are not precisely spelled out and rarely measured because all the roles ultimately report to the same team, headed by a c-level executive who has too many conflicting responsibilities.

Architecting should be distinct from building to ensure that what is created conforms to what was devised. Architects and builders should not manage the funding process and hold the purse strings nor should they own the assets that are built for the customer. This, unfortunately, is not the case in the single-counter IT model because

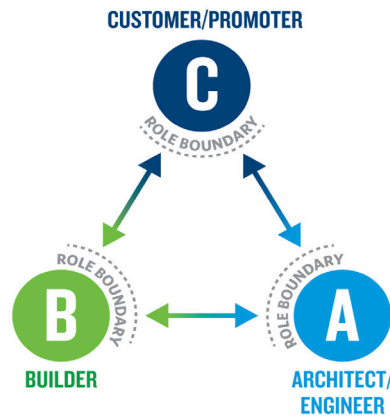
all these roles are ultimately under the same hat. Moreover, that same organizational unit is also responsible for defining the criteria for quality *and* for assessing compliance. In the construction industry, as in many other fields, there are external and independent bodies that define quality criteria and check for conformity.

Thus, the single-counter IT model creates an untenable situation where all these accountabilities are concentrated in a single functional group. When trade-offs have to be made between systems quality and budget constraints, we observe that decisions are systematically skewed toward the builder's priorities. That's understandable when the bulk of the investment is consumed by the builder role and when the only truly measured accountability is to deliver a working system on time and to budget. There's an obvious lack of independence between opposing accountabilities.

The consequences are devastating for business agility. The single-counter IT unit becomes focused on short-term delivery at the expense of the qualities that could make digital systems more resilient to future changes. Quality assurance assessments are more concerned with assessing whether the systems do what they are supposed to do rather than assessing the quality of the systems that are built. Everything that impacts project delivery—i.e., leads to a working system—is privileged, either directly or indirectly.

IT project teams are measured on time and budget, not on the overall quality of the assets created. When the next digital investment comes along, it is hamstrung by having to deal with systems built over the previous years by blinkered teams that focused on immediate

Figure 2: Clearly Delineated Roles in the Construction Industry



results and neglected aspects that would future-proof investments. As a consequence, they often created unnecessary complexity that bogs down future projects—and the whole enterprise. The impact of what might seem a small or insignificant design compromise in a single project is compounded by many such decisions over multiple projects and many years.⁷

The IT Amnesia Syndrome

The single-counter IT model also impacts priorities. From our observations of how success is defined and measured for digital teams, it is clear that being on time and on budget is the most important expectation for IT. That is no surprise since the business executives who decide to invest in digital technology know that the expected returns can only be reaped when solutions are in place and working. Time is of the essence. No wonder organizations around the world have systematically put in place project management practices and processes that consistently track time and costs.

The importance of being on time and on budget strongly determines how a single-counter IT unit organizes itself. Teams are assembled, competencies are developed, processes are defined and measures of success are stated with project delivery in mind. While there is nothing

wrong with being organized for project success, the problem lies in the IT organization being centered on projects and IT operations at the expense of other responsibilities.

In project mode, technology assets are created, but as long as what is delivered works, it is assumed to be correct and its business usefulness goes unchallenged. When the next project comes along, the previously delivered assets are taken as an input to solution design and cost estimation. But because a project is a *temporary* endeavor, anything that happens before the start or after its end is not part of it and therefore not managed. It is of secondary interest, at best. For example, the quality of the documentation that should accompany the digital solution built within a project only serves future projects while consuming precious time and money in the current one. Cutting back on documentation may help a project stay on track but becomes a liability for the organization, jeopardizing future change endeavors. The same could be said for standards compliance or any other quality element that will show benefits with time. Our research reveals that a project-oriented IT organization will systematically create these shortcomings that boomerang back in future projects. Thus, paradoxically, being focused on projects leads to future project failure.

Every time an investment decision kicks off a new project that triggers changes to existing systems, the current state of the digital

⁷ This is often referred to as the “tyranny of small decisions.” See Kahn, A. E. “The Tyranny of Small Decisions: Market Failures, Imperfections, and the Limits of Economics,” *Kyklos*, (19:1), May 2007, pp. 23-47.

How the Case Study Illustrates the IT Amnesia Syndrome

One of the major issues that the transformation program faced was a lack of sufficient understanding of the legacy PMSs. Some of the computer code had been written decades before by employees who had either left or moved to other roles in the company. When documentation existed, which was not always the case, it was often unreliable. As a consequence, considerable effort went into understanding the nature and format of the data held in the old systems, how it was processed and the numerous interfaces that had been built to other company applications. Some unanswered questions either paralyzed a team or required lengthy “archeological digs” into the existing code. As the project progressed, several unpleasant discoveries were made about the current assets that invalidated assumptions and required new designs and resulted in new—higher—cost estimates and timeline readjustments.

environment is taken as a given, just like any other project parameter. There is no one who can question what has led to the current state. The past is forgotten. No lessons are learned. The organizational memory is flushed. Amnesia sets into the organization. And those who might be able to shed light on the complexities encountered by the new project are usually busy delivering other projects or have left the organization.

A few organizations have told us that if a program had used a scaled agile framework, the program wouldn't have suffered from unpleasant surprises. But this is a misunderstanding of agile methods; they are a way to manage these uncertainties, not to avoid their appearance. On the contrary, we have found that unpleasant surprises are considered to be normal and unavoidable. Agile methods encourage practices that still result in overly convoluted systems and underdocumented applications.

Managing Expenses, Not Assets

With the single-counter IT model, project after project, year after year, the IT unit creates or enhances digital systems used by employees across the organization and, increasingly, by customers and ecosystem partners. Over their entire lifecycle, from the first version, which may take months or years to complete, up to their retirement, which may be decades later, these IT systems can easily consume hundreds of millions of dollars in investments for initial building, implementation, enhancements and maintenance.

Despite such high levels of investments, these digital systems usually are not considered to be assets and managed accordingly. Managing a digital system as an asset would require someone who understands its typical lifecycle. It would

also require someone able to calculate the total cost of ownership over the entire useful existence of such an asset. Moreover, the team in charge of that asset should monitor the maintenance cost trends over time and determine when the asset has come to the point where it should be replaced or decommissioned. The team would also track the value provided by the asset over time—even when the project is in development—and frequently reestimate and report on that value. In other words, one would expect that digital assets should be managed like power plants, cargo ships or any other investment of that magnitude.

The single-counter IT model is incompatible with this type of asset management. Indeed, most staff in IT units probably don't know much about asset management, not because they haven't been bothered to learn about it but because they lack the motivation to do so. Teams operating within a single-counter IT unit are responsible for everything under the digital sun and thus focus on what's most important: delivering working systems through projects. What happens after a project ends is of secondary importance, as long as what was promised is delivered.

The never-ending treadmill of project work leaves very little time to develop an asset management practice applied to the systems that are put in place. With single-counter IT, what should be perceived as an asset is little more than a vehicle for funding. But beware of the temptation to demand that your IT organization manages your systems with proven asset management practices. Not only does the IT unit have too many conflicting responsibilities but it is the wrong path to follow.

How the Case Study Illustrates Managing Expenses, Not Assets

There was no question about who was sponsoring the PMS transformation program and where the funding was coming from. There was no doubt either about the benefits the new platform would provide: quicker implementation of new products and features, more accessible data for actuaries to analyze product performance and risk, faster changes to underwriting rules and more rapid premium calculations. Customers would also benefit from self-service capability and more personalized engagement. Moreover, the use of application programming interfaces (APIs) would help the company connect to ecosystems of choice, as well as enable fintech startups and other partners to enrich the company's value proposition to customers. There was, however, a grey area about the ownership of the system.

By default, it was assumed that the IT department would be responsible for the technical aspects of the solution. The accumulating cost of the program was known and tracked by company leaders, but as a program, not as a resulting system or platform. There was an implicit convention in the company that the CIO's organization would build and operate the platform and thus own it. But the IT department, having few skills or incentives to measure benefits, concentrated on what it knew best: identifying and reporting costs. Its processes and tools for cost gathering were geared toward tracking project budgets and maintenance allowances, not tracking the costs of owning business platforms over multiple years and including expenses often hidden in projects not specifically related to the particular platform. Despite the ambitions of the program and what it was building, the resulting platform was never perceived as an asset.

Recommendations for Tackling the Hidden Causes of Project Failure

The five hidden causes of investment failure described above and their implications are summarized in Table 1. Just as massaging one's hamstring will not cure sciatica, putting a superficial balm on digital investment failure symptoms will not yield durable results. Organizations have been facing these issues for decades but have focused on the symptoms, not the root and hidden causes. Tackling the hidden causes will require fundamental and radical changes because it will require a shift in the allocation of duties, a discernible change in accountabilities and, ultimately, a fundamental rethinking of the organizing model to harness the capabilities of technology. Achieving this will inevitably demand a mindset change.

Recommendation 1: Own and Manage Digital Systems as Productive Assets

Digital systems are complicated creations and their construction can be complex. Though building an airplane or an electricity generation facility involves complex manufacturing and building processes, the ownership of such physical products is always clear. Moreover, these products are managed as assets. In contrast, IT systems are usually not treated as assets

in the true sense of the word. Even though IT departments have long reported on the total cost of ownership of their systems, this cost is essentially the funding required to keep them running. No account is taken of their intrinsic value or the value they deliver. Occasionally the cost of an IT system may appear on the balance sheet, but only as a capitalized expense that will be depreciated over time.

The single-counter IT model is not good at asset management and never will be: its core competency is to build, operate and maintain systems within funding constraints. Don't be fooled by equating migrating to the cloud as meaning that there are now no assets to manage; there will still be systems, processes and data. Though these are abstract concepts compared to the physical products most consider as assets, as long as the most important measures of performance remain as they are, a single-counter IT unit will not become an asset owner. Moreover, we do not believe that this should be the case. In most other fields, the business area that has the requirements and provides the funding is also the asset owner.

Virtually nothing has been written on what true asset management of information systems means. The knowledge gap between the natural owner and the technical teams that build and maintain a system is wide and deep. But that should not stop the initiator of the funding from taking ownership of what is delivered. We believe

Table 1: Summary of Hidden Causes and Implications

Hidden Cause	Implications
The Illusion of Control	<ul style="list-style-type: none"> Blindness through delegation Faith in metrics rather than leadership Focus on project execution rather than the achievement of outcomes Missing important measures
The Fallacy of the “Working System”	<ul style="list-style-type: none"> Funding becomes the objective Assumption that delivery of a working system will result in performance improvement Risk analysis focuses on the nondelivery of projects not the nonachievement of value
Conflicts of Interest	<ul style="list-style-type: none"> Lack of independence between key roles Inconsequential usurpation of responsibilities Rampant “technical debt” Lack of agility
The IT Amnesia Syndrome	<ul style="list-style-type: none"> Systematic creation of unnecessary complexity for future projects No ownership of long-term implications of decisions made in projects Rampant “technical debt”
Managing Expenses, Not Assets	<ul style="list-style-type: none"> Essential IT systems not managed as assets Value not tracked over time Build-up of “technical debt” Excessive cost Lack of agility and responsiveness

this is a great starting point for reducing the gap. The first step is to have a full lifecycle perspective of digital investments and to adopt a portfolio approach to managing digital assets.⁸ Like all assets, at some point a digital asset stops being an asset and becomes a liability and a drag on the organization achieving its strategic ambitions. Often referred to as “technical debt,” this liability accumulates over the years and encompasses not only the technical component but also the underpinning processes and data.

Recommendation 2: Search for Value, Not Funding

Money is what gets things done in an organization, which means the funding model drives much of the behavior we see in organizations. Delivered systems all too often have no real business value, or at least not enough to recover the sunk costs. Having a more metered

approach to funding⁹ reduces risk but also means that the continuation of a project is determined by evaluating the utility of what has been delivered at a point in time and demonstrating results. Showing business-related results, however, requires an intimate understanding of the business itself which can be impeded by the divide that exists between a single-counter IT unit and the rest of the organization.

Changing the funding model from one based on the delivery of a working digital system to one shaped by the realization of business value through transformation will require the assignment of accountabilities to be radically changed. Note, however, that moving away from the single-counter IT model doesn’t mean getting rid of IT. Work that IT teams are doing today will have to continue and will undoubtedly increase. But organizations need to find ways to eliminate the gap between IT and the business. Those bringing deep technology knowledge must

8 See: 1) Peppard, J. “A Tool for Balancing Your Company’s Digital Investments,” *Harvard Business Review*, October 18, 2016; and 2) McFarlan, F. W. “Portfolio Approach to Information Systems,” *Harvard Business Review*, September 1981.

9 See Cao, L., Mohan, K., Ramesh, B. and Sarkar, S. “Adapting Funding Processes for Agile IT Projects: An Empirical Investigation,” *European Journal of Information Systems* (22:2), March 2013, pp. 191-205.

have more skin in the game in the quest to find opportunities for performance improvement and reap the benefits from any investment that may ultimately be made.

These changes will mean that the focus in organizations shifts from securing funding and managing throughout the project lifecycle to generating business value through digital technologies. For that to happen, they must break free from the yoke of the single-counter IT model. Organizations must move away from the situation where part of the enterprise is seeking performance improvement and another is deeply immersed in the technology and oblivious to the business value potential of what it creates. Moving away from the current, widely accepted model, where a CIO manages teams of techies who are “at your service,” is bound to create uncertainty. What is needed is a common focus on business value while avoiding placing conflicting responsibilities in one area of the organization.

In our research, we have seen that even small changes can have dramatic effects. For example, the CEO of a world leader in providing outsourced services to the pharmaceutical and biotechnology sectors, tells sponsors of digital investments they should expect to be called back in front of the company’s investment committee, sometimes many years after a project has officially ended, to demonstrate that the expected business outcomes have been achieved. This change has had a dramatic impact on how digital investments are perceived, from improving the quality of business cases to managing what is built as an asset over its full investment lifecycle.

Recommendation 3: Eliminate Conflicts of Interest

To eliminate conflicts of interest, roles that shouldn’t be assigned to the same person, team or unit must be clearly segregated. This segregation will also eliminate skewed decision-making patterns. In the context of digital assets, there are three types of roles that need to be decoupled:

1. Those who architect digital assets from those who build and maintain them
2. Those checking for quality compliance from those who create what is being checked
3. Those managing projects from those managing what is created by the projects.

But organizations shouldn’t expect single-counter IT to initiate the segregation in these three areas because they require a radical change in the way IT has been operating for decades. This change will mean splitting the monolithic technology desk (i.e., the single-counter IT unit) into chunks or removing entire demarcation walls between different responsibilities from an overly powerful fiefdom.

But splitting conflicting responsibilities is not sufficient. Accountabilities must also be reassigned and new measures of performance against what is expected must be put in place. We believe that single-counter IT suffers from—or is quite happy with—a lack of performance measurements, especially in the area of business change. If the newly split responsibilities are not accompanied by new measures of attainment, there may be little visible effect because decision-making will continue to be skewed toward what is measured and deemed most appropriate—i.e., being on time and on budget. Regardless of the depth of the structural changes, corresponding metrics must be put in place.

One company we studied has established a Value Management Office. Though this office nominally reports to the CEO, it is a resource for the whole c-suite. One of its areas of focus is on enterprise architecture, a responsibility that is more usually found in the IT unit. Working with the leadership team, the Value Management Office has established policies and guardrails for the company’s operating model and the design of systems, processes and applications. It also conducts reviews of projects to ensure conformance to company-defined standards and guidelines.

Recommendation 4: Do IT Differently

The root cause of the problem that most organizations have with getting value from digital technologies is the way they are currently organized to embrace and engage with them. They are designed to *manage IT rather than deliver value from IT*. Though the difference might seem subtle, its implications are profound. The prevalence of single-counter IT is a direct consequence of focusing on managing IT, leading to an engagement model that needs a radical overhaul.

Today, the dominant organizing model is to corral all staff with knowledge of and expertise in IT into a separate organizational unit. This may have worked well when the role of IT was primarily to support back-office business operations. But this is a flawed model when digital technologies become part of the fabric of an organization and a tool for competitive differentiation, when companies have digital offerings and engage with customers and ecosystem partners in a digital way, and when data drives insights and shapes business models.¹⁰

The single-counter IT model effectively positions the IT unit as a supplier, so outsourcing becomes an attractive option. After all, who better to run the IT shop than a company with technology credentials, scale and proven experience? Given that IT staff members are usually physically housed separately from what is considered to be the main business, IT has, in effect, already been psychologically outsourced.

To be sure, executives recognize many of the problems that we have highlighted in this article, but they usually see them as a consequence of the weaknesses of their IT leaders and the IT department, not as a weakness of the engagement model. A popular way of addressing these problems is to overlay new practices and initiatives on what is a broken model. But this approach addresses the symptoms, not the true causes of problems.

An example is introducing so-called agile development methods to overcome difficulties with inaccurate requirements, lack of collaboration, failed IT projects and slow speed of delivery. While a small number of agile teams in a particular area of the business can show promise, scaling agile practices across an organization has proven to be problematic. The reason is that the true causes of the problems—the structural impediments, inappropriate metrics, antiquated funding model, wrong accountabilities and traditional mindsets—are all still in place. These causes need to be tackled head-on.

Encouragingly, some leaders are pushing a reform agenda. The global CIO of an automotive component supplier told us that “In three to

five years everyone [in the company] will work in IT.” The chief digital officer of an integrated network of physician clinics, outpatient centers and hospitals with over 600 locations maintains that “it’s not even reasonable anymore to have all technology responsibility living in a single, consolidated organization.”

These and other pioneering companies are designing and implementing new ways of organizing to better fuse digital technologies and the business. Though they may not have arrived at their desired destination, they have ideas on how things must be done to reap the digital dividend. With no playbook, they are having to invent new concepts and practices. Some of these don’t work as expected and will be either tweaked or discarded. As one CIO told us, “You don’t plan a transformation, you learn it!”

Some organizations have gone as far as discarding the notion of projects to focus instead on what they call products. By doing this, they have eliminated the divide between what they refer to as digital projects and traditional IT delivery by creating a single technology operating model. These organizations are organizing technology teams around customer-facing products and the underlying platforms that enable them. They have also established a governance model that ensures a focus on strategic priorities, with a robust process for prioritizing work. As of yet, however, there is no agreed-upon definition of what organizations mean by digital products.

Some organizations have gone even further. For example, Starling Bank, a U.K. mobile-only digital bank, does not have an IT department, yet depends heavily on technology. In Australia, Judo Bank does not even own or operate any of its own IT.¹¹ Singapore’s DBS Bank, with a history that dates back to 1968, is organized internally around 33 platforms, with platforms defined as a combination of technology assets, talent and associated funding, all focused on achieving specific platform missions. These platforms are loosely coupled but highly cohesive, with each co-led by a business and IT person (what the company calls “two in a box leadership”), with

10 See: 1) Peppard, J. “It’s Time to Get Rid of the IT Department,” *The Wall Street Journal*, November 27, 2021; and 2) Bastien, R. M. *Understanding the Corporate IT Strategy Game: What You Should Know But Were Never Told to Drive Corporate Information Technology Paradigm Shift*, NAIT Publications, 2018.

11 Breidbach, C. F., Joshi, A. M., Maglio, P. P. von Briel, F., Twigg, A., Dickens, G. and Wunderlich, N. V. “How Everything-as-a-Service Enabled Judo to Become a Billion-Dollar Bank Without Owning IT,” *MIS Quarterly Executive* (21:3), September 2022, pp. 185-203.

Mixed Outcomes of the Case Company's Digital Transformation

Eight years after the policy management digital transformation program began, the results were neither outright failure nor grand success. The insurance business was doing well, with more customers and insured risks, but the policy management systems re-platforming program had not succeeded in getting rid of all the old PMSs. Not only did the insurer spend double what was expected before the program kicked off, but the actual positive impact on business agility and resilience was far from what was anticipated. Rating changes, launching a new product or the ability to acquire new business through mergers and acquisitions was still seen as being bogged down by an overly complex portfolio of digital systems—as had been the case for the previous decades.

joint metrics that both work from a singular backlog. Another example is Global energy company Enel, which is currently working toward a future organizational design where, according to its CIO, “IT will be completely diluted into the business and disappear.”¹² And, finally, DPG Media has recently rolled out a new organization design, with employees and teams aligned to what it calls “Domains,” guided by “Mission Control.”

Recommendation 5: Address the C-Suite Catch-22 Challenge

No executive sets out with the intention for IT in their organization to fail or underachieve. Yet decisions they make, even with the best of intentions, do unfortunately lead to failed projects, negative outcomes and wasted investments. These executives, while holding influential positions, just don't know what it takes to succeed with technology in today's digital-first world. Essentially, they don't know what they don't know. They are working from a cognitive map that is fundamentally defective, and this leads to flawed decision-making. Unless this is remedied, their organization's dismal results from IT investments will continue.

This is probably the most difficult challenge to address as it requires a significant mindset shift and an adjustment to executives' frame of reference regarding how digital technologies can be successfully harnessed and the organizational implications. With a resource like money, employees implicitly understand that you cannot spend more than you have in a budget without consequences. This is a reflection of their lived experience with finance in their own personal lives. Similarly, there is an acceptance that the HR department shouldn't directly manage

employees; rather, this is an intrinsic part of being a manager.

Yet where digital technologies are concerned, there is a willingness to delegate far too much to IT professionals, as evidenced by the prevalence of the single-counter IT model. The knock-on effects inevitably lead to dissatisfaction with the IT unit and a perpetual cycle of frustration, disappointment and, ultimately, failed investments. The only way that this cycle can be broken is for an enterprise's executives to truly understand what it takes to successfully embrace digital.¹³ A digital investment's ultimate outcome usually has little to do with the project itself. The pain of failures and frustration is merely a symptom of the problem; the true causes must first be acknowledged before they can be tackled. But there is a Catch-22: the c-suite must recognize that while it is a large part of the problem, it is also a fundamental cornerstone of the solution.

Concluding Comments

The history of IT in organizations is checkered. Despite making investments in digital technologies, the realization of expected business outcomes continues to be elusive for many. While there is no shortage of prescriptions, our research has uncovered a variety of hidden causes that strongly determine the eventual impact of the investment. Tackling these causes will greatly help organizations in the pursuit of value from digital investments. The bottom line is that the success of a digital investment is determined long before the associated project or program kicks off.

¹² Peppard, J. The Metamorphosis of the IT Unit, *MIT CISR Research Briefing*, No. XIX-7, July 18, 2019.

¹³ Peppard, J. “Executives Get the IT They Deserve,” *Harvard Business Review*, December 1, 2015.

Appendix: Overview of the Research

Despite the significant body of research identifying success and failure factors, methodologies and best practice guidelines, our starting proposition was that there were factors that are influential on investment outcomes but were obscured.

To help us elaborate on this proposition, we did a root-cause analysis and identified cause-effect relationships between the various factors that our data signaled as influencing project outcomes. We also wanted to identify the practices associated with the initiation, management and oversight of digital projects through to achieving expected business outcomes and the ongoing maintenance of a project's deliverables. We then visually mapped these together to develop a comprehensive picture.

As an illustration, consider the hidden cause we labeled "the illusion of control." It is well established that having a so-called "business sponsor" increases the likelihood of a project's success; indeed, many project-management methodologies mandate this. In our conversations with project sponsors, they frequently reported that, despite following prescriptions and best practices and attending to recognized success factors, they were surprised when the project failed to deliver the expected outcomes. In particular, they emphasized that they had monitored the project very closely. But because they were usually not directly involved in many aspects of the project, they relied on reports and metrics to assess its status and progress.

Our proposition was that, even armed with all this information, having a project sponsor only provides the illusion of being in control of the project. The reality is that a project can deliver a working system, even to budget and schedule, but it may have multiple workarounds, may compromise the architectural integrity and may have considerable technical debt. Moreover, once the system goes live and before any benefits begin to accrue, the project will usually end and the implementation teams will be disbanded.

As well as surfacing "the illusion of control" as a hidden cause of digital investment failures, our analysis also uncovered the other hidden causes impacting investment outcomes described in

this article. Having uncovered the hidden causes, we then identified potential ways to tackle them, validating them through an iterative cycle of analysis and comment. We first ran a series of workshops with practitioners to critique our findings and assess whether these resonated with them. Next, we drafted the first version of this article and circulated it for critique. Finally, we incorporated the feedback into later versions of the manuscript.

About the Authors

Joe Peppard

Joe Peppard (profjoepeppard@gmail.com) is a professor and academic director at the Michael Smurfit Graduate Business School at University College Dublin. His research studies contemporary issues and challenges that executives and board members face in an environment of accelerating technological change. While his research is academically rigorous, he strives to steer a pragmatic path. His aim in his writings and teaching is to help busy executives be successful. He recognizes that executives want frameworks and models to help them understand their own predicaments and insights and to figure out options, consequences, and clear actionable advice and guidance.

R. M. Bastien

Over three decades, R. M. Bastien (rm@rmbastien.com) has held multiple roles in IT departments of midsize to large organizations: programmer, business analyst, tester, database administrator, solution architect, data architect, enterprise architect and systems integrator, as well as several IT leadership positions, leading teams of IT architects in insurance, transportation, telecoms and banking. He is now an author and speaker, helping business executives rethink their organizing model to get more value, faster results and higher quality outputs from IT investments. He has a bachelor's degree in management information systems and a research-oriented master's in business administration.