

Tech debt: Reclaiming tech equity

Almost every business has some degree of tech debt; the trick is knowing how to identify, value, and manage it.

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As the world becomes more digital, technology is increasingly becoming a core driver of value for business. But as companies modernize their IT, a hidden peril is emerging that could undermine their efforts: tech debt. This refers to the off-balance-sheet accumulation of all the technology work a company needs to do in the future.

Poor management of tech debt hampers companies' ability to compete. The complications created by old and outdated systems can make integrating new products and capabilities prohibitively costly. Challenges hidden in the architecture can spring surprises that make projects run over budget and miss deadlines. Much of IT employees' time is spent managing complexity rather than thinking innovatively about the future.

And disjointed data architectures prevent businesses from making full use of advanced analytics to improve their decision making.

In a recent McKinsey survey,¹ CIOs reported that 10 to 20 percent of the technology budget dedicated to new products is diverted to resolving issues related to tech debt. More troubling still, CIOs estimated that tech debt amounts to 20 to 40 percent of the value of their entire technology estate before depreciation. For larger organizations, this translates into hundreds of millions of dollars of unpaid debt. And things are not improving: 60 percent of the CIOs we surveyed felt their organization's tech debt had risen perceptibly over the past three years (Exhibit 1).

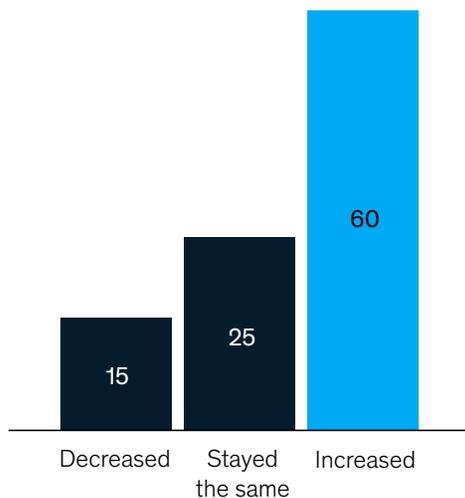
¹ McKinsey carried out a survey of organizations' tech debt in July 2020. We surveyed 50 CIOs of financial-services and technology companies with revenues in excess of \$1 billion.

Exhibit 1

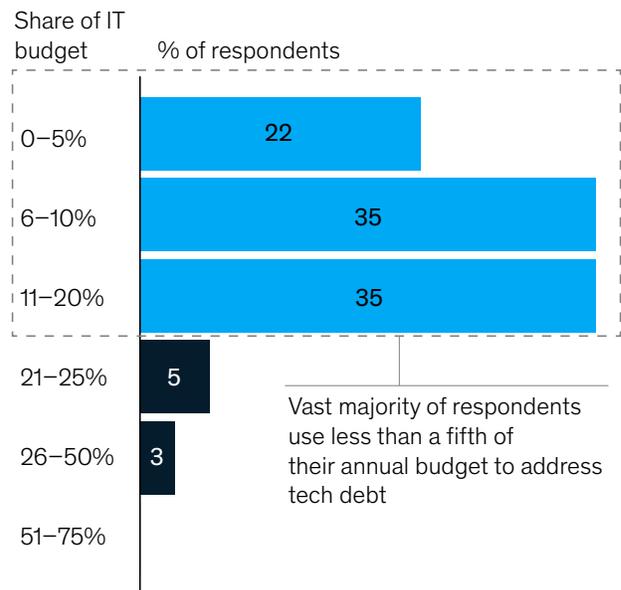
CIOs believe tech debt is increasing—but generally allocate less than 20 percent of their tech budget to paying it down.

CIO estimates of spend on tech debt

Perceived change in tech debt over past 3 years
% of respondents (n = 45)



Share of tech budget allocated to paying down tech debt



Source: McKinsey survey of tech debt among 50 CIOs, July 2020

As with financial debt, a degree of tech debt is an unavoidable cost of doing business, and it needs to be managed appropriately to ensure an organization's long-term viability. That could include "paying down" debt through carefully targeted, high-impact interventions, such as modernizing systems to align with target architecture, simplifying application interfaces, and retiring redundant apps and databases. Some companies find that actively managing their tech debt frees up engineers to spend up to 50 percent more of their time on work that supports business goals. The CIO of a leading cloud provider told us, "By reinventing our debt management, we went from 75 percent of engineer time paying the [tech debt] 'tax' to 25 percent. It allowed us to be who we are today."

Note that the goal is *not* to reach zero tech debt. That would involve devoting all resources to remediation rather than building points of competitive differentiation. It would also make it difficult to expedite IT development when strategic or risk considerations require it. Rather, companies should work to size, value, and control their tech debt and regularly communicate it to the business.

What is tech debt?

A good way to get a grasp of tech debt is to think of it as having the same two components as financial debt:

- The *principal* is all the work that must be done to modernize the entire technology stack. This

includes deferred maintenance or upgrades below the app layer, modifications to comply with data standards, and bespoke packaged software (that is, customizations that take software beyond the point where the original vendor can easily provide ongoing support).

- The *interest* is the complexity tax that every project pays today. It derives from the need to work through fragile point-to-point or batch data integrations, harmonize nonstandard data, and create workarounds to confront risk and meet business needs. These frictional losses inhibit companies' long-term velocity and productivity and harm current budgets and returns on investment.

Together, principal and interest create a strong drag on enterprise value (Exhibit 2).

A company that spends more than half of its IT project budget on integrations and fixing legacy systems is likely to be caught in a tech-debt spiral in which it is paying interest only. Conversely, a company that operates on a modern IT stack and has little or no tech debt is able to direct almost all its technology investment to new offerings. Most companies sit somewhere between these two extremes.

What drives tech debt?

Simply by being in business, an organization accrues some level of tech debt; it will always have

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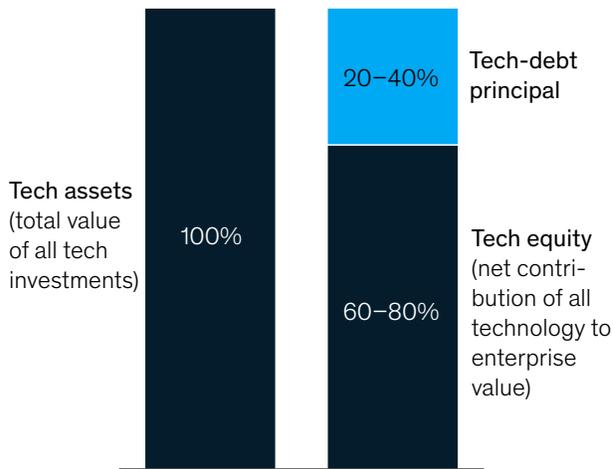
—Former CIO, major cloud provider

Exhibit 2

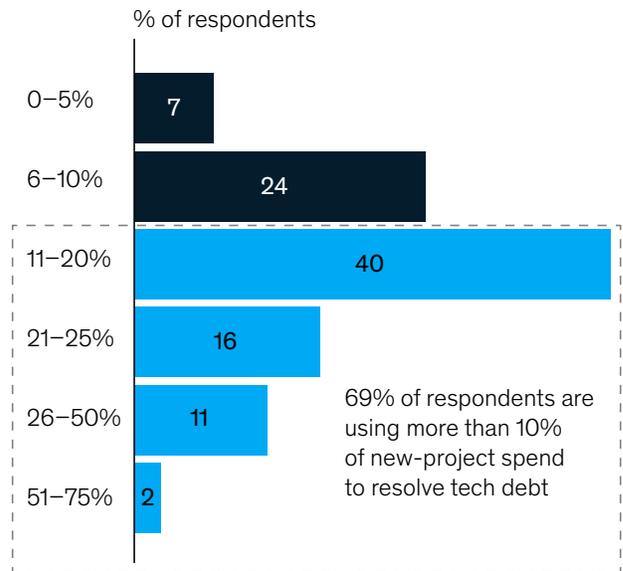
Tech-debt principal accounts for up to 40 percent of IT balance sheets, while most companies pay more than 10 percent interest on projects.

CIO estimates of spend on technology debt

Principal: Relative share of debt and equity on tech balance sheets



Interest: Estimated share of new-project spend allocated to resolving tech debt



Source: McKinsey survey of tech debt among 50 CIOs, July 2020

technology of different ages from different sources serving different purposes. But tech debt can also be driven by certain actions or omissions that leaders can take steps to avoid once they become aware of them. Here are some red flags to watch out for:

Strategy

- A failure to clarify the overall business strategy, define the capabilities needed at the enterprise level, or link the road map to these capabilities
- Poor alignment between IT and strategy, with limited means to measure the impact of IT initiatives on strategic imperatives
- A mismatch between funding and strategy, with resource allocation out of sync with portfolio management and no agreement on how to estimate total cost of ownership

- Underprovisioned tech integration during M&A, leading to undue complexity, orphaned systems, fragmented data sets, and inordinate risk

- Excessive complexity in products (with a high proportion of bespoke products that could be simplified), processes (with little or no standardization between regions or businesses performing similar tasks), or applications (with multiple apps serving the same purpose)

Architecture

- Legacy issues that continue to generate cost for the business
- A failure to update hosting environments for applications, infrastructure platforms, and back-end databases and servers

- Inflexible software with custom-developed or heavily customized packages; monolithic blocks of code with poor interfaces that limit reusability and embedded business rules that are difficult to modify; and insufficient infrastructure to cope with usage peaks without slowing down
- Insufficient use of standard systems-integration approaches, resulting in a proliferation of point-to-point integration across applications
- A failure to agree on a consistent data model, leading to poor data quality, rising costs, inconsistencies in data access, and an inability to enrich data with external sources

Talent

- Internal and external skill-availability gaps that bottleneck organizational capacity, delay delivery of products to users, and pose a resource risk
- A failure to align incentives, with tech debt routinely overlooked in decision making, teams focused on short-term feature delivery, and team capacity rarely allocated to reducing tech debt

Process

- Poor prioritization of project backlogs, with little use of task-planning tools and no clear link to business value
- Weak management of development and maintenance processes, with infrequent measurement of code quality, deployment unduly reliant on developer input, and time-consuming manual testing
- Unstable IT operations, with minimal instrumentation, significant blind spots, weak disaster recovery, and multiple add-ons that deviate from a system's original intent, lack proper documentation, and conflict with one another

Awareness of these red flags helps organizations prevent their future tech-debt burden from

becoming excessively high. For the best results, however, they also need a clear process for reducing the tech debt they already have.

How do you tackle tech debt?

The best organizations manage tech debt through a strategic process similar to the one they use in managing their financial capital structure. They follow seven principles:

1. *Start with a shared definition of tech debt.* Business and IT leaders need to agree on what constitutes tech debt. One organization defined it as the negative impact of technology on the business, particularly as manifested in rising operational and technology costs, slower time to market, and reduced flexibility.
2. *Treat tech debt as a business issue, not a technology problem.* The ownership of tech debt for an app or system should be traced down to the profit and loss (P&L) it serves. Dashboards tracking this debt enable leaders to reflect the “interest” costs for their business in their P&L statements. To reinforce shared responsibility for outcomes, efforts to tackle the debt must be clearly linked to strategic priorities, such as simplification and risk reduction.
3. *Create transparency to value the debt position.* Tech debt, like cost to serve, must be understood at the level of individual applications and journeys and valued according to objective criteria. Each app must be clearly linked to 100 percent of the resources it consumes—infrastructure, people, and so on—and to the business purposes it serves. Some organizations triage their applications, classifying them as “buy” (to invest in and grow), “hold” (to leave alone), or “sell” (to wind down).
4. *Formalize the decision-making process.* Following a portfolio approach based on a clear, mutually agreed-upon set of rules and principles allows IT and the business to work together, align on decision making, and address any conflicts of interest that might otherwise lead to

inertia. Adjusting incentives in P&Ls and within platform-aligned product teams helps reinforce the new process.

5. *Dedicate resources to tackling tech debt.* Once organizations have reached a unified view of their tech-debt position and what their strategic goals are, they need to allocate funding, mobilize people, and send a clear message from the top that addressing debt accumulation is a priority for the business. Some companies set up a central board of architects to resolve tech-debt issues related to specific developments. Agile organizations often dedicate a “spare pair” in a ten-strong team to fixing any production issues stemming from the team’s code or working through the tech-debt backlog when there are no immediate issues to tackle.
6. *Avoid a big-bang approach to writing down all debt.* Tackling tech debt via infrequent IT megaprojects poses high execution risk and often hinders the business’s ability to compete while a project is under way. Instead, companies should earmark a portion of their IT budget for paying down debt consistently, predictably, and over a strategic time horizon. This prevents debt buildup, particularly during periods of rapid change when multiple business priorities compete for attention.
7. *Determine which areas are “bankrupt” and explore shifting them to a greenfield stack.* When a division’s tech debt exceeds 50 percent of its tech asset value, the risk and cost of existing systems start to outweigh their benefits. Building a greenfield stack has downstream consequences—such as the need to create new linkages to group data platforms and customer-facing web portals—that make it a last resort, but it can’t always be avoided. Some organizations in this position look for an “IT platform in a box” solution. Others break down marathon projects into smaller components to quickly release tangible value back into the business.

By observing these seven principles, a company can design a process for tackling tech debt in a

matter of weeks, with implementation following almost immediately. Measurements of tech debt will need to be built into financial models, tools, and databases across the business.

Two companies, two approaches

The best way to understand and manage tech debt depends on an organization’s starting point, context, and targeted management model. Two examples illustrate some of the options companies can pursue.

A global financial-services company was experiencing frequent IT outages, sometimes affecting the entire business, and decided to address tech debt across all its assets. Parts of the organization relied heavily on legacy systems whose depreciated running costs had been judged more attractive than the economics of modernization programs. Overall, the firm’s IT costs were better than the market average, but underinvestment and high operational and maintenance spending pointed to an unhealthy cost structure. Moreover, its federated governance processes for managing IT investments made resolving issues challenging.

The firm decided on a four-part approach to tackling its tech debt. First, it developed a method of quantifying complexity that enabled it to identify where tech debt would arise. Connecting this capability to its overall financial and performance-management systems created transparency into the true costs of ownership across the organization. To ensure tech debt was factored into business decisions, the company then reworked its formal governance processes and practices by, for example, adjusting ongoing maintenance costs to reflect the “interest” on tech debt. Finally, to monitor the effectiveness of the new approach, it tracked proxies of tech debt, such as IT stability.

Having an accurate view of the value and cost of technology investments in each business unit has had a transformative effect on the firm. Some business units were identified as having up to 58 percent *additional hidden cost* in their IT total

cost of ownership. With the rollout of a new global platform to unify IT governance, the transition from legacy to new platforms is accelerating. The economics of IT assets are now fully reconciled with the architectural reality on an ongoing basis.

Another organization, a US insurance company, saw digital as critical to reaching its next growth horizon. However, a series of recent M&A deals had left it with redundant IT systems, overly complex processes, and outdated platforms, creating significant tech debt. To assess the impact on the business, leaders decided to focus on the areas that created the most value—in this case, user journeys and the systems and capabilities that supported them.

After estimating the tech debt for each main journey, the company set a debt threshold and identified journeys that exceeded it. These became the target of immediate efforts to “pay down” the debt.

Armed with insights from this process, the company designed IT and business interventions to improve capabilities. These ranged from rationalizing applications and raising standards for software development to introducing training

and change-management programs to facilitate the adoption of IT offerings. Each intervention was prioritized by mapping implementation costs against value in reducing tech debt. Meanwhile, performance management was reengineered to ensure squads and teams were accountable for delivery and operations.

Thanks to these efforts, the company was able to develop and agree on an acceptable baseline for tech debt across the business. New dashboards introduced to track debt levels in individual user journeys and capabilities have enabled leaders to monitor progress in paying down the debt and unlocking value.

The long road of digitization has brought companies fantastic new technologies and capabilities, but at a cost. Mountains of tech debt have left some businesses struggling to bring innovations to market at speed and within budget. The good news is that tech debt can be measured and managed. With the right approach, organizations can regain control and refocus their technology resources on creating value for customers and the business.

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