

WHEN TAKING CARE OF TECHNICAL DEBT REQUIRES A TECHNICAL REBOOT

Addressing Technical Debt in Telecom



TECHNICAL DEBT
AFFECTS EVERY
ORGANIZATION,
REGARDLESS OF
HOW STRATEGIC
THE APPROACH OR
HOW MINDFUL THE
LEADERSHIP.

THE THREAT TO BUSINESS RESILIENCY NO ONE IS TALKING ABOUT

You are in danger of going out of business because of something you've probably never heard of: technical debt.

Technical debt is a major impediment in most organizations, but it is often unacknowledged or misunderstood, especially outside of IT departments. The concept derives from that of financial debt, in which one borrows against the future. As with a traditional loan, if enough debt accrues, the borrower can no longer afford to pay anything toward the principal. Instead, all their available cash goes toward the interest. The debt is never reduced (and may even increase), and both the lender and the borrower stagnate.

Technical debt is similar but applied to software. Simply speaking, it is the work you're putting off "til tomorrow" so you can complete a near-term job. For instance, as your tech department builds or customizes a large enterprise system, such as a CRM or billing solution, it may be under a lot of pressure to deliver features (or partial features) that will create user value quickly. This redirection of efforts may lead the department to postpone full implementations, testing, or necessary refactoring.

"Shipping first-time code is like going into debt," says Ward Cunningham, one of the authors of the Agile Manifesto and the expert credited with defining the concept of technical debt. "A little debt speeds development so long as it is paid back promptly with a rewrite... The danger occurs when the debt is not repaid. Every minute spent on not-quite-right code counts as interest on that debt. Entire engineering

organizations can be brought to a standstill under the debt load of an unconsolidated implementation, object-oriented or otherwise."

Too often, IT organizations defer a rewrite or refactor to accommodate other seemingly high-priority needs. With limited time and money (too little to do it all), the organization must make a choice between adding debt and failing to deliver some features. When organizations avoid debt entirely, they can stifle innovation. At the other end of the spectrum, some organizations take on too much and then fail to pay it off.

The balance is delicate. The best approach lies in the middle between these extremes: Take on debt, but only an amount that can be paid off without paralyzing your IT capabilities.

Technical debt is likely the bane of your IT team's existence, even (or especially) if they do not realize it. And while technical debt relates to IT platforms, its consequences are felt across the business. The more work maintaining debt requires, the less bandwidth you have to seize new market opportunities or address competitive threats. Ultimately, it undercuts business resiliency. When urgent situations arise, you likely will not have enough capacity to act quickly; all your resources will already be tied up. Technical debt affects every organization, regardless of how strategic the approach or how mindful the leadership. **For telecommunications (telecom)—an industry weighed down by legacy systems requiring heavy, ongoing maintenance—the issue is reaching a breaking point.**

IT'S SINK-OR-SWIM TIME FOR TELECOM ORGANIZATIONS

While technical debt is latent in nearly every industry, recent trends are quickly exposing the issue in telecom. Successful players are increasingly focused on delivering on new promises to customers. Wireless subscriber numbers are on the decline,¹ and smartphone adoption has plateaued.² Industry innovators are differentiating themselves through new features —and technical debt is among the obstacles preventing other players from matching their movement.

For many years, telecom companies were flush with cash from wireless and broadband revenues. Excess revenue could be used to hire extra developers who could power through overflow work, all the while covering up the symptoms of technical debt. As the industry confronts continued revenue pressure, however, the interest payments have become unmanageable. Now it is time for telecom organizations to address this growing challenge.

Fueling the negative impacts of technical debt are several industry-specific financial conditions:

- **Price pressures on the core revenue stream, such as unlimited data in wireless.** When T-Mobile transitioned to a more traditional unlimited data plan for customers in 2016, other providers jumped on board to keep up. In the years that have followed, data has continued to become increasingly commoditized. Carriers like Verizon are now offering unlimited data plans at \$35 per line per month.³ Competing on price, T-Mobile offers an even lower \$30 per line per month unlimited data plan.⁴
- **Overarching financial debt of more than \$100B in some companies.** AT&T reported debt of \$158B at the end of Q2 2019,⁵ and Verizon reported more than \$110B in total debt at the end of 2019.⁶ A saturated market is shifting its focus to diversification and growth through acquisition, which only adds to telecom organizations' funding deficit as they take on new projects such as building out fiber, increasing the wireless spectrum, and seeking additional growth through acquisitions. Verizon's acquisition of Telogis and Fleetmatics, T-Mobile's purchase of Sprint, and Dish's acquisition of Boost Mobile are just a few examples underscoring an increased focus on acquisition to drive growth.

Against this backdrop, technical debt is manifesting itself in a variety of ways:

1. Routine maintenance requiring a disproportionately heavy resource investment
2. Increased testing of fragile systems, due to a growing number of systems touched by even simple changes
3. Growing expense tied to hardware and software licensing; funds tied up in outdated or unsupported systems can compromise investment in product and service innovation
4. Heavy resources required for system change and maintenance driving the strategic direction of the business

THE LINK BETWEEN DEVOPS AND TECHNICAL DEBT

As technical debt grows, all changes—even routine operations—can be a challenging and resource-intensive task. Organizational paralysis is the natural result of unpaid technical debt. Many telecom organizations are unable to deliver the velocity of marketing offers that new industry leaders are providing to customers. Only by changing the strategies they use to address this debt buildup can established telecom companies operate nimbly and drive—not react to—new features and market opportunities.

TAKING A SYSTEMATIC APPROACH TO TACKLING TECHNICAL DEBT

There is no one-size-fits-all approach to enterprise IT; there is also no such thing as a technical debt collector. Yet the threat is a very real one: If you do not change, you are inviting new entrants to undercut the market because they can operate more efficiently. You can address this yourself. The important thing is to take action now.

How can you ensure a nimble, fast response to this threat and equip your organization to seize new market opportunities? A singular focus on eliminating debt altogether can stifle innovation. Instead, work in smaller pieces and iterations to enable ongoing feedback and incremental improvement. Incrementally and systematically paying down your debt will ultimately accelerate progress against it.

Until 2013, a leading telecom organization relied on the waterfall method of development, a linear process that features a single release each quarter. This approach, however, was not keeping up with the organization's marketing needs. New customer requirements were being identified at a rapid clip, but they were not being addressed, and more frequent releases were needed to remain competitive.

With 60 percent of its IT budget dedicated to keeping the lights on, the organization decided to shift to an Agile DevOps approach to development in which the majority of code facilitated production in real time. The change wasn't easy—it required support across the organization as an investment decision with clear inputs, outputs, and risks. The company also prioritized updates to existing applications in its tech stack to retire technical debt in a way that made practical sense. The shift allowed the organization to focus on developing the minimum viable product that delivered a specific and reusable business service. When the team focused on the quality of code, not the quantity, it could address bugs before further liabilities had a chance to accumulate.

Over the next three years, the organization was able to increase the velocity of code in production by 25 percent and the quality of code by 30 percent per annum. When a competitor announced a new feature, the company could conceive of a new product and roll it out in direct response to market demands within a couple of weeks—a timeline unheard of in its pre-DevOps days. The telecom leader's DevOps approach allowed it to adapt to an evolving business environment and an ever-changing technology set.

Through our client work, we have identified several common approaches to addressing technical debt that, when implemented effectively and in the right instances, may lead to success.

Before determining the best approach for your organization, the first step is to make sure you understand the backlog. Debt is only debt if it relates to work you truly need to get done.

Leave it alone (or at least some of it): Put up with the technical debt. This option is effective in the short term, if your systems are stable. Perhaps you built up technical debt by deploying features no one outside of the IT department cares about. If so, there might be parts of the system you can just leave broken. Work around them or encapsulate them, and eventually abandon them. Chances are no one will notice—or care.

Break up monolithic systems: Divide the problem into pieces or encapsulate it by services. Prioritize which issues to address. Allow some parts to have debt when necessary, while restricting backlogs in other areas.

Pay it down: Under normal circumstances, 20 percent of all efforts should be spent reducing technical debt. In extreme situations that require substantial catch-up, increase this amount to 60 percent. When prioritizing developments, though, organizations need to understand which features add value and which do not; otherwise they will end up making negative progress.

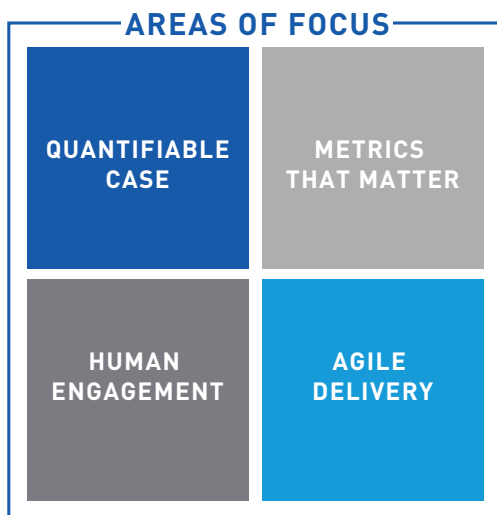
Alternatively, your organization may need a complete technical reboot. Organizations rarely have the stomach for such a drastic, disruptive undertaking. It will likely triple your build estimate, at a minimum. This approach makes the most sense when debt is particularly high. To be successful, you will need a high-powered team. Sometimes it is more work to pay down the debt than to rebuild the entire thing, building exactly—and only exactly—what you need. When doing this, use a parallel development approach so that all new developments are built in a new way, while old systems are left alone as the organization gradually migrates.

SOMETIMES IT IS MORE WORK TO PAY DOWN THE DEBT THAN TO REBUILD THE ENTIRE THING, BUILDING EXACTLY—AND ONLY EXACTLY—WHAT YOU NEED.

If you have opted to reboot, recognize that transformation is required. Here are a few key considerations:

QUANTIFIABLE CASE: Envision the future.

Approach it like any investment decision. Quantify technical debt at the beginning in the same way you would start with a P&L balance sheet for a company and project forward. Help the C-level understand the amount of currently-used maintenance money that will be available for investment.



METRICS THAT MATTER: Craft the strategy and define new success measures.

Figure out what to prioritize and organize. Recognize that technical debt is not just a tech problem but also a customer experience problem. Let the customer journey guide your decision of which features are (and are not) needed in each platform and system. Once you have determined which features to keep, take 20 percent off the top or extend the timeline by 20 percent to avoid accruing additional technical debt.

HUMAN ENGAGEMENT: Socialize and align.

There is a significant human component to replacing the IT stack. How will you get your employees on board? Is your company even ready to have the right mindset to implement an IT stack change like this? Do not overlook the need to engage employees via retraining and reeducation. A technical reboot might require your hardware people to redirect their efforts toward software, for example.

AGILE DELIVERY: Execute and implement.

Set up your organization for long-term success by shifting to agile business processes or adopting DevOps. Metrics should matter to the new framework, which should not rely on legacy data points.

¹ ["AT&T Weathers Record Loss of Wireless Users with Forecast Intact"](#) Bloomberg Technology, Apr. 25, 2017.
² ["After 9 Years, the Smartphone Boom is Finally Over"](#) Business Insider, Sept. 4, 2016.
³ ["Verizon Phone Plans: More Unlimited Plans to Mix, Match, and Save"](#) Verizon, Mar. 2, 2020.
⁴ ["Our Best Basic Unlimited Data, Talk & Text Plan"](#) T-Mobile, Mar. 2, 2020.
⁵ ["AT&T, Facing \\$158 Billion Debt, to Sell Puerto Rico Network for \\$2 Billion"](#) Ars Technica, Oct. 9, 2019.
⁶ ["Verizon Communications Total Long Term Debt \(Quarterly\)"](#) Y Charts, Dec. 31, 2019.

PUTTING IT ALL TOGETHER

Technical debt is the largest impediment to business resiliency for many telecom organizations today. The industry is moving more quickly than ever as new entrants and advancing technologies disrupt the status quo, and survival requires the flexibility to adapt to threats and seize opportunities. Many of the industry's biggest names are paying down technical debt instead of looking to the future, and they need a new strategy to ensure their continued success. Though there are many ways to pay off or lower it, awareness of the debt and how to address it is essential. Only once a team is informed can it focus on right-sizing the debt and developing a plan to pay it down. Addressing the problem is key to ensuring resiliency and the capacity to capitalize on new opportunities.

ABOUT NORTH HIGHLAND

North Highland is a leading change and transformation consulting firm, recognized for its deep expertise and collaborative, action-oriented approach. Invested in our **client's success** and powered by the belief that **everything begins and ends with people**, we bring together the brightest minds to create **positive change** and **transform businesses** through **customer, workforce and operational** lenses.

Headquartered in Atlanta, Ga., and regularly named a best place to work, North Highland is an employee-owned firm with more than 5,000 consultants worldwide and 65+ offices around the globe. The firm is a member of Cordence Worldwide (www.cordence.com), a global management consulting alliance. For more information, visit northhighland.com and connect with us on [LinkedIn](#), [Twitter](#) and [Facebook](#).

Copyright ©2020 The North Highland Company. All Rights Reserved.

For more information about this topic, please contact:



Tony Doocey

Managing Director
Media, Entertainment, and
Communications Lead

Tony.Doocey@northhighland.com