



Use Raygun As the North Star for Your Digital Transformation

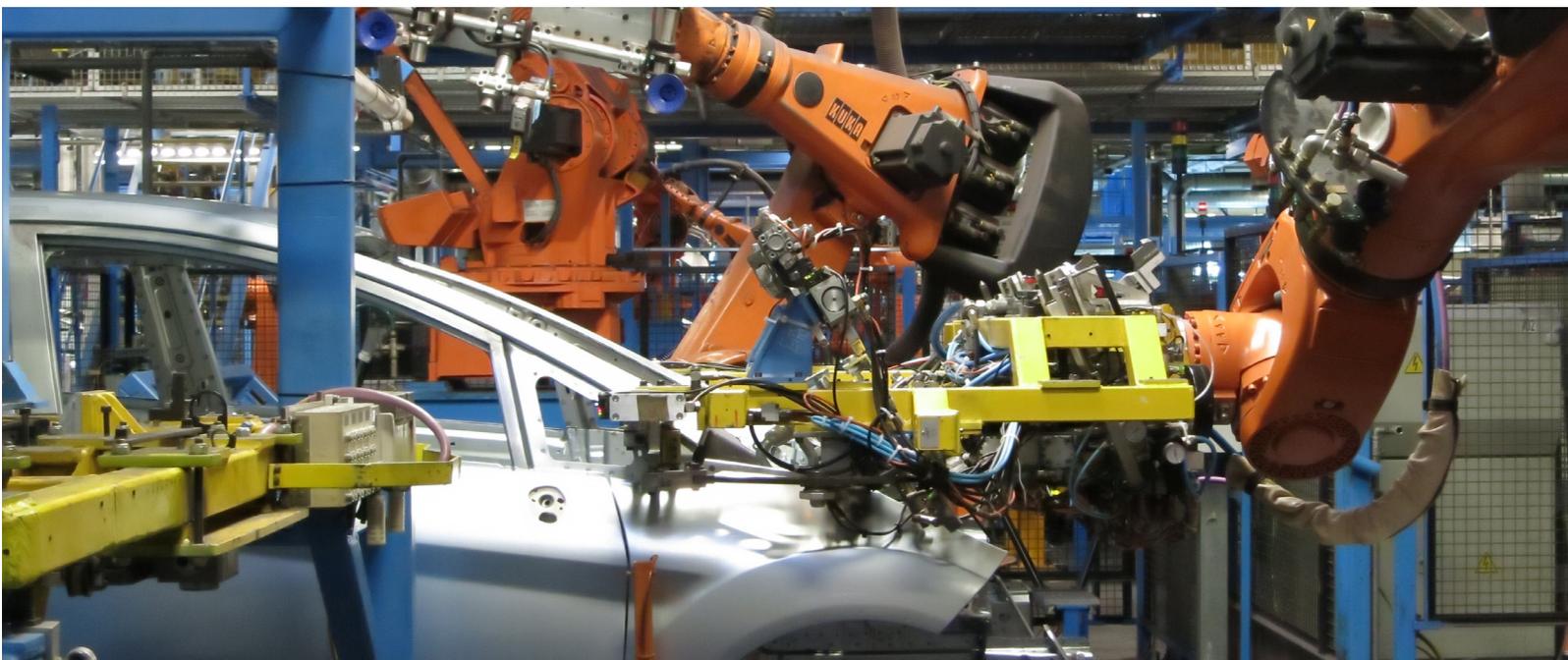
Eric Dietrich

Summary

In June of 1903 in Dearborn, Michigan, an entrepreneur founded and incorporated a company. It turns out that he had a pretty good business model. So much so, in fact, that there's a decent chance that you've heard of the company: Ford.

For 115 years, Ford has designed, built, and sold automobiles, distributing them all over the world and becoming synonymous with global manufacturing. But do you know what Ford is doing, in spite of those 115 years of incredible success with a tried and true business model?

Ford is [undergoing a massive digital transformation](#).



And they're far from alone. Established companies the world over are doing the same thing, and they're not doing it as much to gain an edge as they are to remain relevant in [a world that software is eating](#). And because

this type of transformation requires such radical changes, they're dealing with significant, but not insurmountable, organizational challenges.

For this reason, companies not only need to understand that digital transformation is necessary and they should have a plan for implementing one, but they also need a series of checkpoints along the way to know that they're heading in the right direction. That can often be the most challenging bit. And while there are all sorts of possibilities for measuring progress, we'd like to offer some clever ways that you can make use of Application Performance Monitoring (APM)—specifically Raygun's offering—to check in on the progress of your digital transformation.

Table of Contents

Summary	2
What Is a Digital Transformation?	5
What Is APM? Rethinking the Standard Definition	7
APM In a Mature Organization	10
APM in a Pre-DX Organization	12
Measuring Progress With an APM Maturity Model	14
1. Do You Have a Path to Production Monitoring?	14
2. Can You at Least Use APM in a Lower Environment?	15
3. Are You Monitoring at Least Something in Prod?	16
4. Do You Understand the Data You're Getting Back?	17
5. Are You Prioritizing and Acting on the Data That You're Getting Back?	18
6. Have You Automated Detection and Mitigation Actions?	20
7. Are You Preventing Bigger Problems by Detecting Smaller Ones?	20
APM is Good Business	22
APM, Above All, Monitors Your Readiness to Remain Competitive	24

What Is a Digital Transformation?

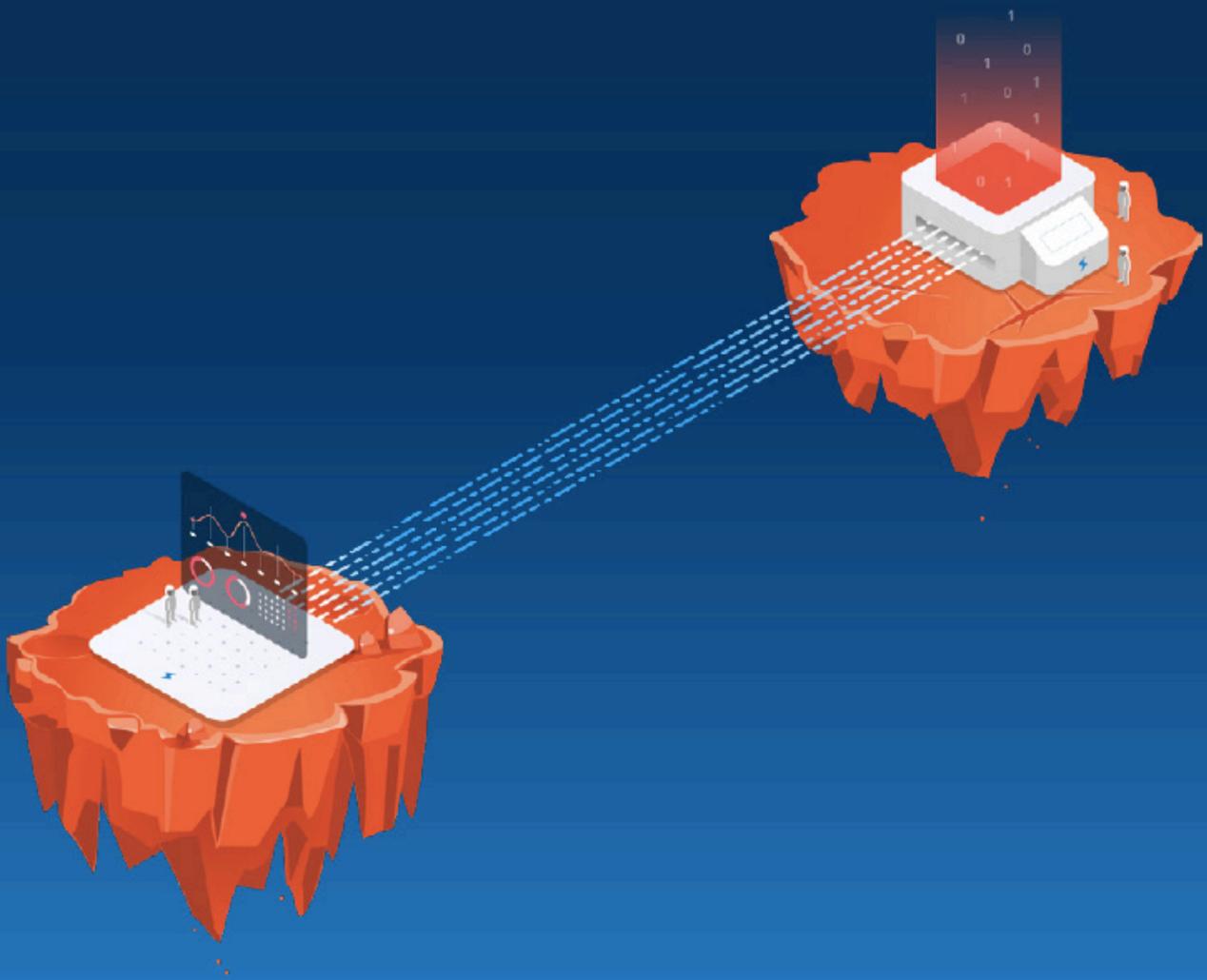
Before we get into specifics, however, let's be clear about what a digital transformation actually is. You probably have an idea of what the term means, at least in the abstract. But it's somewhat vaguely defined across the industry, and we need to be precise about what it is in order to explain how Raygun's APM can guide you through it.

[According to the Enterprisers Project](#), a digital transformation is "the integration of digital technology into all areas of a business, fundamentally changing how [it delivers] value to customers." They go on to explain that this integration requires a cultural and philosophical change to emphasize experimentation and continuous evolution.

That's an excellent working definition, but an example would make things more concrete. So let's return to the example of Ford and what it's doing.

Ford is, of course, continually modernizing, as is any company with a pulse. It's moving away from mainframes, while increasingly automating its supply chain and general internal processes. But, important as it is, modernization alone does not constitute a digital transformation.

Ford's digital transformation hinges on the shift in value delivery. Historically, customer value occurred when someone wandered onto a dealership lot and left the proud owner of a new Mustang or F150. But with Ford's new vision, customers reap value when they get home from the library, whether or not they own cars.



A digital transformation is a seismic shift. And it requires more than just updating software platforms and automating manual processes. It requires so much, in fact, that Raygun actually wrote a complete guide to digital transformations. But, for our purposes here, suffice it to say that digital transformation requires a complete philosophical overhaul and an unprecedented amount of systems interconnectedness.

And that need for interconnectedness is where APM enters the fray.

What Is APM? Rethinking the Standard Definition

You'd be hard-pressed to earn a living in software these days without hearing about APM. In fact, you probably have a good working understanding of the concept. "Application performance monitoring" is an IT term that's refreshingly self-explanatory. It involves monitoring the performance of your applications and taking appropriate preventive or corrective actions when necessary.

And that's both a fine definition and an accurate one. But the activities that are part of application performance monitoring have been unfortunately disjoint, historically. And disjoint activities aren't going to work if you want to use APM as a guide for your digital transformation.

To understand why these fault lines exist under the umbrella of APM, consider [Gartner's definition of APM suites](#), which are the tools offering APM. According to Gartner, there are three functional dimensions of APM:

1. Digital experience monitoring (DEM)
2. Application discovery, tracing, and diagnostics (ADTD)
3. Artificial intelligence for IT operations (AIOps) for applications.

Drilling deeper into [how Gartner defines these functional dimensions](#), DEM is a "monitoring discipline that supports the optimization of the operational experience and behavior of a digital agent, human or machine, as it interacts with enterprise applications and services." In other words, DEM measures and improves experiences that people (and bots) have when using your application.



Whereas DEM concerns itself with metrics around how external agents experience the application, ADTD is an internal concern, oriented around the deceptively simple question, “what just happened?” Discovery, tracing, and diagnostics work together to create a complete picture of what has happened within an application by mapping relationships among physical pieces of hardware, servers and software running on them, and the very source code itself. All of this is intended to minimize cycle time between issue detection and remediation.

The last leg of this functional dimension tripod is, perhaps, the most intriguing: [AIOps](#). Coined by Gartner, AIOps is “a platform that combines big data and artificial intelligence functionality to replace a broad range of IT Operations processes and tasks, including availability and performance monitoring, event correlation and analysis, IT service management, and automation.” In short, this functional dimension involves turning the data from the other two dimensions into intelligent, and often automated, improvements to field operations.

So as a leader interested in leveraging APM, you need to concern yourself with three different problems, corresponding to these functional

dimensions.

1. How do we track and record end user experience?
2. How do we capture deeply technical data about what our applications are doing?
3. How do we put all of this data together and use it to help our own operations?

Naturally, this gives rise to a fourth question: “how can you fit all of this together?”

This is where Raygun’s APM offering represents an important shift. Rather than bolting answers to these questions together after the fact, Raygun’s APM solution assumes from the outset that they should be unified, starting with the deeply technical and tying it seamlessly both to end users and operational improvements.

Recall that digital transformation involves turning a company’s interconnected systems into the lifeblood of its value delivery. In order to do that, you need a unified way to reason about these systems’ performances, meaning that APM needs to be a unified concern. Without that, you’ll struggle with the digital transformation itself, to say nothing of using APM to measure its progress.

APM In a Mature Organization

Having looked in detail at a definition of APM and its dimensions, let's take a look at the state of APM in both a pre- and post-digital transformation organization. First up, the mature, digitally transformed organization.

To understand what this looks like, consider companies like Netflix, Facebook, and Uber. At first glance, these companies may seem like an unfair comparison since they have no pre-digital legacy from which to transform. And while that's true, it's worth noting that companies undergoing digital transformations look to these sorts of firms as the gold standard for their digital transformation goals. So viewed through that lens, it's entirely appropriate to use them as a model.

What does APM look like in these organizations? What is the nature of its role, and how much prominence does it have?

In short, the use of APM is extensive, and its role vital. Companies like these define the state of the art for concepts like continuous deployment and operations at scale. While traditional organizations shed blood, sweat, and tears to reduce deployment cycle times from months to weeks, these organizations think nothing of rolling code to production multiple times per minute.

These organizations don't achieve such lofty capabilities with incremental improvements, like shortening development sprints or adopting a build machine that takes more advantage of parallel processing. Instead, they make use of extensive automated testing and APM.

Each commit triggers extensive tests which, when passed, create a roll to production. But the work and the testing do not end there by a long shot. These companies use APM to continue vetting the newly promoted functionality. DEM makes sure that nothing about the new bits degrades the experience in any way, while ADTD provides detailed data should anything at all go wrong. And, finally, AIOps ensures that the appropriate rollbacks or feature toggle flips happen in the event that there's a problem.

This is why the unified APM experience is so critical. When you're changing the bits in production this rapidly, you can't have any daylight between these functional dimensions of APM.

Companies like Netflix, Facebook, and Uber—companies with the ability to deliver value to users minute to minute—don't have the luxury of

long lead times for testing or sandbox environments that mirror production. Instead, they rely on APM to deliver unprecedented levels of responsiveness.



APM in a Pre-DX Organization

Companies that are exemplars of digital experience make for nice success stories. It's appealing to read about them, profiled on CIO.com, breaking impressive new ground in terms of capabilities. But for most organizations, there's a lot of work to do before arriving at that point. And that work isn't incremental—it's the organization-upheaving stuff that digital transformations are made of.

So your organization probably has a much more modest relationship with APM, if any at all. If you're pre-digital transformation, the way you monitor and report on your code is likely quite different.

Perhaps you have a long-standing mainframe that drives your global supply chain. Over the years, you've developed a hodgepodge of apps in a hodgepodge of stacks that interface with it. For the mainframe itself, performance monitoring happens indirectly when a problem with one of the satellite apps is definitively not originating in that app. Only then do you bring in the extremely expensive consultant to fire up the green screen interface and do some troubleshooting.

APM in this sort of environment is largely manual, mostly ad hoc, and nearly entirely reactive. In the IT world, we've been monitoring application performance in production since production existed. And when we're deeply intertwined with legacy systems, we're often bound to similar legacy ways to monitor behavior and remediate issues.

Perhaps you have responsibility for a production application where outage notifications come in while you sleep. As you sip your coffee the next



morning, someone in ops briefs you on the outage, when it started, why they think it might have occurred, and when to expect an estimate for getting the system back up and running normally.

In a post-DX world, your life will look a lot different. You'll see far fewer outages since mature APM will offer you early detection. And when they do occur from time to time, intelligent, automated agents and empowered DevOps pros will take care of it before that first whiff of morning coffee. Your involvement will now happen in the form of a post-mortem and decisions about where and how to invest to make a future brief outage less likely.

And this is not just a matter of replacing legacy systems with new ones. Digital transformations involve a steady march toward not just new technologies, but toward new capabilities. The problem in these sorts of environments isn't legacy systems per se, but rather the constraints those systems tend to force on your capabilities.

So in the next section, let's think about capabilities specifically in and around APM. Your digital transformation involves a constant push out of your comfort zone and into unprecedented capabilities. And the APM features that you're using and adopting will show you how far along you are.

Measuring Progress With an APM Maturity Model

No doubt you're familiar with the iconic [capability maturity model](#) (CMM). It defines a framework for measuring and improving the productivity of a software organization. And people have [generalized the concept](#) of maturity models to what Martin Fowler describes as "a series of levels of effectiveness." You can apply this same concept to your digital transformation using APM.

Don't worry. Nobody is going to ask you to get an "AMMI certification" to declare yourself "digitally transformed" or anything like that. The idea is simply that you can draw a continuum between where you are now and where you can be in the future, using specific APM capabilities at your disposal.

To do that, consider the following levels, structured as questions that you can ask yourself.

1. Do You Have a Path to Production Monitoring?

The first thing to ask yourself is table stakes for starting a digital transformation. Do you even have a path to monitoring your applications in production?

If you have applications that you can't instrument with APM capabilities, or if you have old applications running in completely disconnected environments, you might not have any means to monitor their performance at all. Well, except, of course, for the phone call you receive from some unhappy customer.



Going back to the example of Ford and its digital transformation, think of the onboard computer of a Ford Taurus manufactured 20 years ago. No network connection and minimal logging outside of temporary trouble codes. The only way Ford can “monitor” this system’s behavior is to rely on an unhappy driver to bring the car to a dealership.

The first step along your digital transformation is to start figuring out strategies for monitoring all of your systems.

2. Can You at Least Use APM in a Lower Environment?

You’ll want to walk before you run. And, naturally, non-production environments are a great place to do this without risking missteps or scraped knees.

The very first step along the APM maturity path is to instrument your applications somehow and prove the concept that you can monitor them. Take the example of a Taurus and its limited trouble codes. As you work on the firmware in-house, can you publish and stream system health data somewhere, even if you don’t yet have a means in the wild to capture that data?

Or consider the more traditional example of an old, internal .NET web application that you use for line of business purposes. Can your team instrument it with a solution like Raygun, and at least prove the concept in a test environment?

To graduate from maturity level 1, you need a strategy for monitoring all of your systems. To graduate from this level, you'll need to prove those.

3. Are You Monitoring at Least Something in Prod?

This next step is so conceptually small but will have an outsized impact on your digital transformation progress. This is where you move your APM capabilities from a sandbox and into the world. And you do this by pushing your instrumentation into production.

When you do this, you create a monumental shift in your ability to respond to your user base. Specifically, your reactions to issues can go from reactive to proactive. Production defects are like cockroaches: by the time you see one, there are doubtless dozens that you haven't seen. Most users react to a crash or an error by shrugging and trying again later, or, worse, by shrugging and installing a competitor's app. They probably don't take the time to tell you about it.



"If you don't know that your users are experiencing errors, you can't provide [a high level of] service,"
Greg Shackles,
VP of Technology - Olo

Consider the case of [Olo](#), who builds and deploys white-label mobile apps for their clients. Their principal engineer, Greg Shackles, oversaw an

adoption of Raygun to help improve user experience. “If you don’t know that your users are experiencing errors, you can’t provide [a high level of] service,” he said.

APM in general provides the ability to detect user experience issues. But Raygun’s specific tight integration of error detection and real user monitoring helps users detect and fix those issues very quickly. “We have visibility into people hitting errors so we can take action before the problem escalates,” explains Shackles.

Having APM in production is hugely important to any digital transformation because of the degree to which it tightens the feedback loop with your user base.

4. Do You Understand the Data You’re Getting Back?

Once you’re leveraging APM in production, you’re in great shape, and your prospects for a digital transformation are bright. But there’s still a long way to go between where you are and where you want to be. If you want to go from selling cars to providing transit, so to speak, you have more work left to do. You need instrumentation for APM, but you also need to understand what it’s telling you.

You could implement some kind of rudimentary APM tool that told you that users were experiencing issues and not much else. This is an improvement over not knowing that users are experiencing issues, but without a true understanding of what you’re seeing, you’ll realize limited benefits.

Raygun's offering provides enormous help with this step. By allowing the capture of detailed data for every request and service interaction associated with a user, Raygun provides out-of-the-box insight into how your systems are performing and where the bottlenecks are. And it does this by tightly integrating the user experience with detailed technical information.

In the case of Olo, the benefits were immediately obvious when he explains, "After installing Raygun, we attempted to reproduce a recent production issue that took a while to track down. A brief look at the flame charts quickly pointed to the problem in a fraction of the time it had taken us before."

To realize this level of APM maturity, you need to see the problems and understand the reason for those problems. And Raygun provides critical insight to help you understand quickly.

5. Are You Prioritizing and Acting on the Data That You're Getting Back?

By now, you're using APM to significant effect, actively detecting and addressing issues. But are you using all of the insights available to you in order to prioritize issues and have a general, overarching strategy? That's the next step in the maturity of your digital transformation.

Reality isn't often kind enough to hand in issues one at a time to deal with in sequence. The production environment of your interconnected systems will mean simultaneous issues, trade-offs, market opportunities,



and general complexity. You need good metrics, and you need them quickly. If Ford is going to roll out a rideshare app, they need a means for deciding between addressing an issue in downtown Manhattan and one in a remote town in the Alps. And to do that, they need fast information like the geographical location of issues and numbers of users affected.

Raygun not only provides this sort of data, but it also [eats its own dogfood](#) as a company. They track metrics that include the following:

1. Users affected by bugs.
2. Median application response time.
3. P99 response time.
4. Issues grouped by root cause.

By deciding on key metrics like these and making them available at a glance, they create a means for synthesizing deeply technical information into data that all stakeholders, including non-technical ones, can use to make strategic business decisions.

With this level of maturity, organizations are making serious progress in a digital transformation. When you're able to make important business decisions in real time, according to your software's field performance, it's an excellent sign that you're fundamentally changing your value delivery methodology.

6. Have You Automated Detection and Mitigation Actions?

Up until this point, your digital transformation's APM maturity levels have involved mainly the first two functional dimensions of APM: DEM and ADTD. At this level, you'll start to incorporate AIOps as you begin to intelligently automate mitigation action.

At level (5), you might have a rideshare product manager saying, "let's address the issue first in New York where it impacts more users, and then we can worry about more remote locations." But couldn't you automate this? Certainly, you can create an easy heuristic for prioritizing issues by number of people affected. But you could go even further, automating, for instance, a decision to divert resources from where you have excess capacity to help mitigate an issue elsewhere.

These details will, of course, vary according to the specifics of anyone's organization. But the theme of automating detection, prevention, and mitigation remains a constant. Raygun provides an ability to monitor and alert on key issues, supporting richer alerting and automated problem detection. This, in turn, allows you to build business-specific AIOps schemes.

7. Are You Preventing Bigger Problems by Detecting Smaller Ones?

By now, your digital transformation is in excellent shape. You're using APM not only to detect issues but also to remediate and even prevent issues. And you're doing so in an increasingly automated fashion.

The next step toward your digital transformation's maturity is a subtle but important one. It involves developing an understanding of how to look at smaller issues as indicators of potentially larger ones. In other words, you learn to detect and mitigate precursors.

At this level of digital transformation maturity, you're almost certainly going to be making use of techniques like dark launches and canary releases. When you do this, you'll want systems in place that look for trouble spots that may be symptomatic of larger issues should you expand the rollout.

Raygun furnishes metrics that allow you to understand the impact of each release that you do, meaning that you can easily take advantage of this information to project the impact of a larger rollout and to act accordingly. At this level, you're getting into truly intelligent business processes. In fact, when you have this level of sophistication with APM, you'll typically find that you also have other impressive capabilities: excellent deployment tooling, extensive testing, the ability to roll to production constantly, and all of the things that make you look more like Netflix, Facebook, and Uber, and less like a manufacturing company in the 20th century.



APM is Good Business

You can now see that one could mark a digital transformation's progress with a conceptual APM maturity model. But why should you?

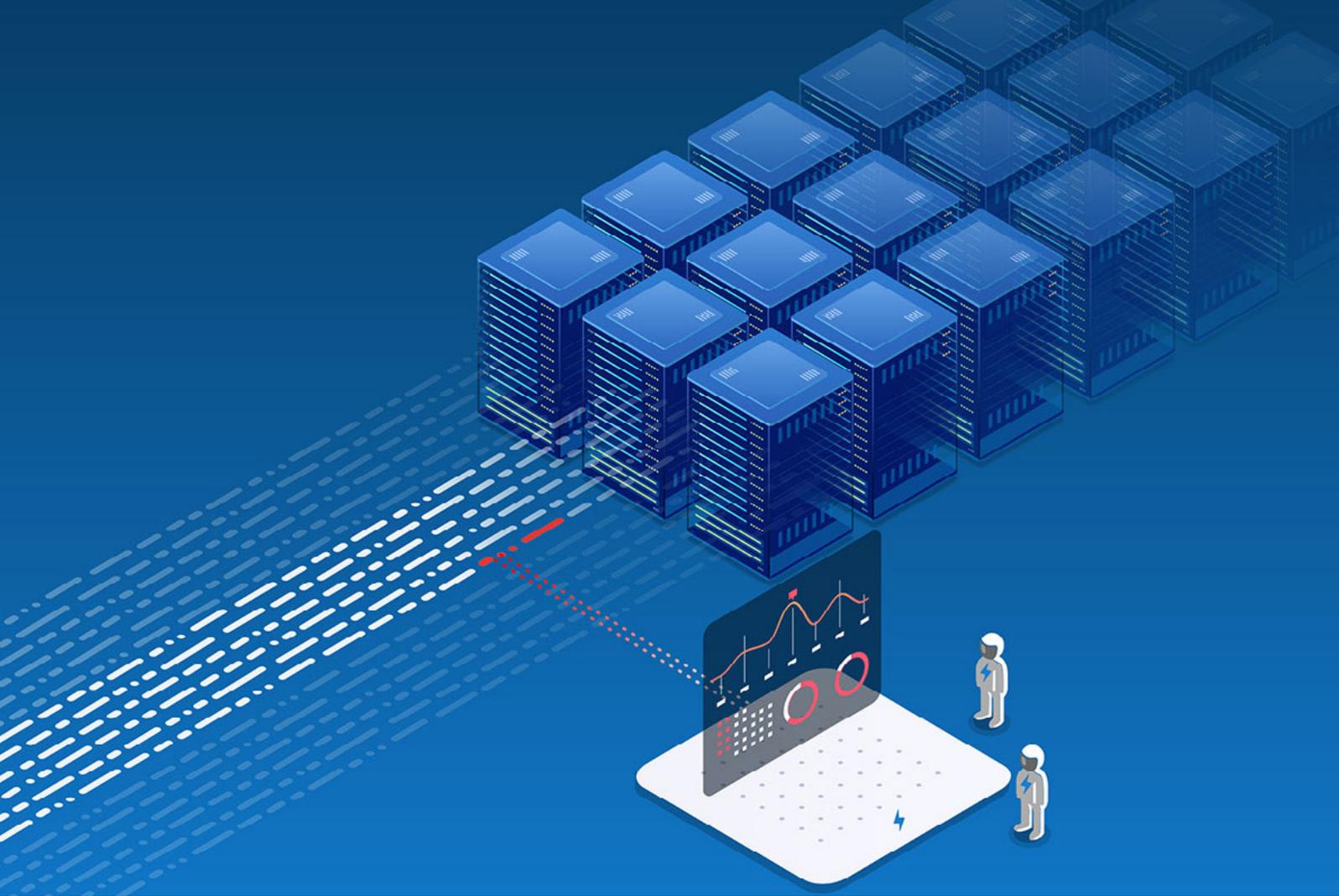
Simply put, the answer is that APM is good business. The digital transformation hinges upon the idea that you want to infuse every aspect of value delivery with digital capability. And the reason you want to do that is all about feedback loops and responsiveness.

Revisiting the Ford example, Ford wants to go from manufacturing cars to getting people from place to place. Why, though? Well, because offering a digitally-driven transportation service means you can evolve much, much faster than you can offer a global manufacturing operation.

And speed is the key. *The Lean Startup*, a book about building successful startups, has become iconic over the last decade, but not just among the entrepreneurial community. Enterprise leadership has also fallen in love with the movement and with the idea of getting the enterprise to behave more like startups in the interests of remaining competitive.

The Lean Startup is so universally popular because it lays out a powerful and easy-to-understand concept. You should approach business using the scientific method, running experiments, learning, and adapting as quickly as humanly possible.

And, in the end, this is exactly what APM facilitates. It allows you to gather real data, in real time, learn from it, and deploy solutions informed by that



learning. This is why APM gives you a competitive advantage and why it plays such a prominent role in a digital transformation.

APM, Above All, Monitors Your Readiness to Remain Competitive

Companies don't undertake sweeping changes, like digital transformations, because they're fun or easy. They are, in fact, the opposite of both of those things. They're difficult and can spell ruin for a company that executes them only halfway.

But the rewards on the other side are enormous, making the risk worthwhile. So it's important to proceed, keeping your eye on those rewards and taking steps to minimize the risk along the way. And those steps include using APM as a guide to help you mark progress and focus on important capabilities.

Raygun's platform is designed with the modern IT leader in mind. By tightly integrating all facets of APM, it's intended to help you ignore traditional organizational silos—the kinds of silos that you're focused on eliminating anyway as you overhaul your entire value delivery model and org chart. Raygun APM can help you at every step of your digital transformation, and it also helps you monitor your own organization's readiness to stay competitive.

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