

Top Ten Lessons of Digital Transformation for IP Operations

Lesson 1: Digital Transformation is a Continuous Mode of Operation, Not a One-Time Effort



Often, a law firm or corporation that embarks on a digital transformation effort views it as project that they will complete in a given time frame, check the box on their task list, and then move on. But going forward this is not how digital transformation will work. The scope and scale of the current phase of digital transformation is far more profound than past phases of this journey. Replacing legal professionals with AI is not as easy as digital transformations of old such as buying a facsimile machine, switching from a typewriter to a word processor, getting an e-mail account on the Internet, or scanning paper files into an online database. Instead, this new era of digital transformation involves the infinitely more complex realm of automating legal thought process. Because the legal frameworks these tools must work within, the client requirements they must accommodate, and the data and facts they need to consider are forever changing, their configuration is not a one-time event. Instead, it will be never-ending and is going to require a whole new workforce of automation/AI configuration specialists who will be a permanent presence in the legal workforce of the future and who will never run out of work to do.

To get a mental picture of this new future, you can think of current law practices as equivalent to

automobile assembly lines before robotics. Yes, there are tools like hoists, winches and wrenches, and the assembly line brings the automobile to each worker as they perform their respective expertise “on the line”, but humans are still operating the tools to perform the work of assembling a vehicle. Already now and more and more into the future, legal practices will look less like assembly lines of old and more like today’s state of the art assembly lines - that is, robots will be performing the work while the workers look on and supervise the work. Already, here at Black Hills IP we are using AI to flawlessly docket PTO correspondence in the blink of an eye, with a few dozen servers now capable of automatically doing 80% of the daily routine docketing of USPTO correspondence. This is a profound change to this particular segment of the IP profession - as it is eliminating a large number of jobs that were previously believed immune to automation. These types of changes will continue to come as more and more legal work that involves the application of fixed rules to a finite set of data become commonplace. All of this, however, requires a new kind of workforce with many legal automation specialists that in many cases can be the same personnel displaced by the automation.

The bottom line is this - successful digital transformation is not just buying new tools for the same people to use to do work faster and better. Instead, it is replacing human personnel with legal robots that do thought work and that will bring a profound change in how legal work is performed. This will require a large investment in legal robots and a large number of automation specialists to continuously tend to and program those robots.

Lesson 2: Externalizing Work is Not Digital Transformation



In recent years many corporate IP departments have turned to externalizing data entry and management processes in an effort to reduce internal staffing needs and lower department costs. This cost-cutting externalization effort typically involves one or both of the following strategies: 1) requiring law firm suppliers, at no cost, to enter IP bibliographic, PTO transactions and/or related communications directly into the company's online IP management database, thereby eliminating the need to use internal resources for this purpose or 2) outsourcing routine internal department tasks to off-shore back-office suppliers that use low-cost labor. Both of these strategies involve a reduction of cost to the corporation and less manual work for the department, so they offer immediate benefits of value. They also arguably make the operation more "digital" and appear to be a step in the direction of digital transformation. But these strategies are not digital transformation, because neither replace manual labor with automation - they just push the manual labor off to a different place. Worse yet, sending work off-shore for labor cost reduction actually becomes an impediment to digital transformation, as discussed below.

For example, one might hope that the new recipients of manual labor responsibilities (law firms and off-shore operations) could take up the task of actually digitally transforming these externalized operations, but there are two reasons why this is either very difficult or highly unlikely to happen.

Let's take the externalizing of data entry to law firms first. In this case, only a small number of corporate IP departments use IP management systems that include API's that provide the functionality needed for digital transformation of the externalized processes. Of those that do, even fewer allow law firms remote access to such APIs due to data security concerns. The result is digital transformation is not possible to achieve even if the law firm wants to do so. It's like giving a sherpa an extra five pounds to carry and forbidding them from buying a pack horse to help.

Regarding the other strategy, off-shore providers specialize in using low cost labor to do laborious, low complexity tasks. They charge by the head, so the last thing they want to do is reduce the amount of labor required to perform the services they offer. As a result, these operations become a barrier to digital transformation because the domain expertise required to implement the transformation is incentivized to find every reason possible that it can't be done.

So the lesson here is clear: any legal department that wants to achieve real digital transformation should not start with externalization of existing manual processes to law firms or off-shore providers. The true transformation journey begins with figuring out how to eliminate as many of the manual labor steps as possible using automation, and only after that has been done, takes steps to externalize what is left. And, moreover, any such externalization should afford a pathway to continued digital transformation, such as providing APIs to their IP systems.

Finally, no corporation should ever buy a new IP management system that does not offer open API's to any supplier the corporation chooses to work with. The following systems offer open APIs for their users: CPA/FoundationIP/IPfolio, Patrix/Patricia, CPI and AppColl. All of these vendors are excellent to work with for API access and offer excellent API capabilities. Here at BlackHillsIP we have interfaces to all these systems, and can actually move data between systems automatically. Even if a system does not have a formal API, we also can automatically assist the entry of data.

Again, if your provider or provider under consideration is not on this list, you should be aware the vendor will constitute a major barrier to digital transformation, especially if they want to trap your back-office work in a manual, off-shore operation, where increasing head counts leads to greater profits.

law departments and outsourced docketing or paralegal services, and between annuity payment services and patent owners.

The lack of interoperability of the various IP management and processing systems in this ecosystem has now become a huge barrier to the digital transformation of the industry. The cost of manually moving data between systems, such as between an automated docketing service and an IP management system, or from an e-mail sent by a corporate law department into a law firm IP management system, now accounts for a large percentage of the cost of these transactions where the rest of the transaction can be automated.

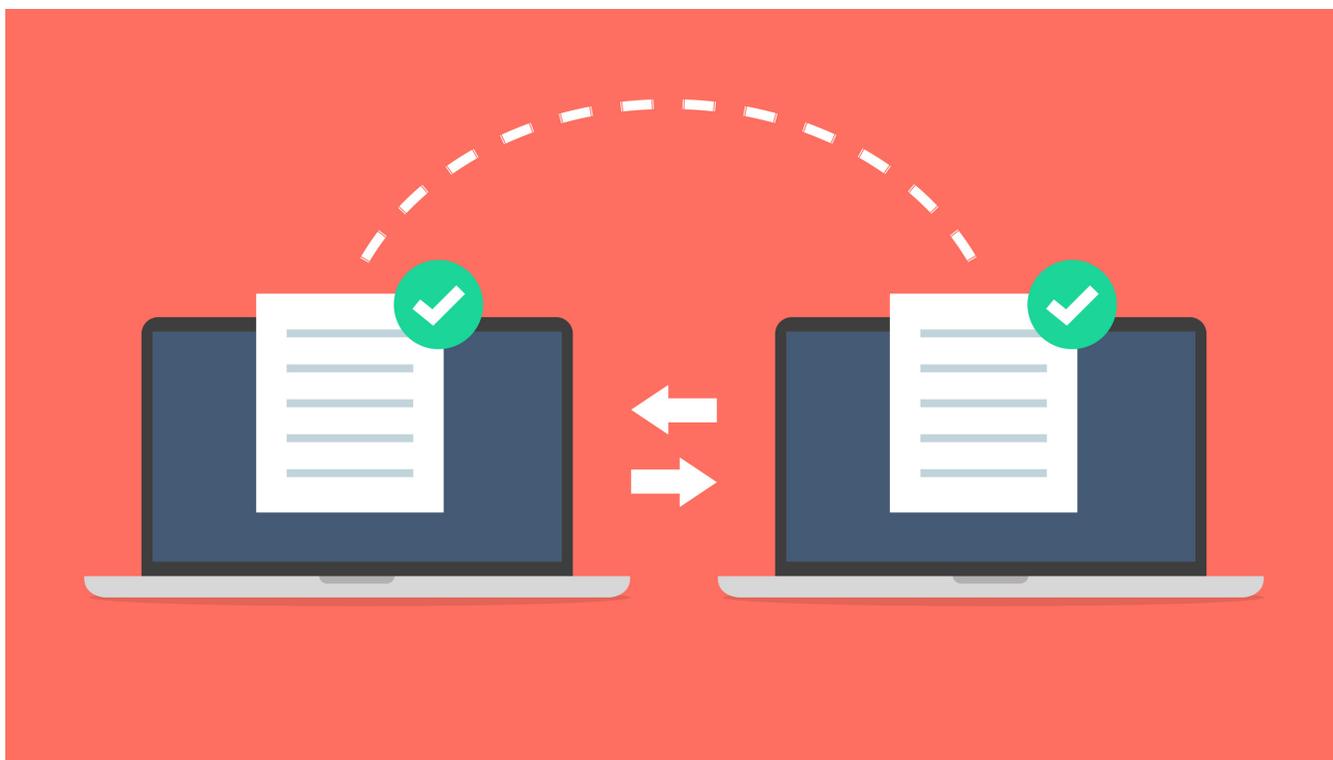
Take for example the cloud-based autonomous docketing services provided by Black Hills IP. Thousands of docketing decisions can now be made in the matter of seconds or minutes. Where interoperability is provided by the target IP system, the docketing transactions can be automatically loaded at lightning speeds. The result is total digital transformation of this IP function, with many advantages including order of magnitude increases in accuracy and speed, and also the benefit of having IP transaction data structured in a “digital transformation” friendly form, allowing more automation downstream like automated reporting.

On the other hand, where interoperability is not supported, and data entry must be done manually, around two-thirds of the benefit of the automation is negated, lost to the delays, labor cost and errors introduced by requiring manual input of the data into the target IP system, and the loss of ability to readily verify the data has been correctly loaded.

Moreover, the lack of interoperability in the industry also hinders many other avenues of digital transformation where so much of what is done on a day in and day out basis is exchanging information that is sourced from structured databases. This data, without interoperability, has to be unstructured in order to be exchanged, and then restructured manually and entered manually on the other end of the exchange. This is clearly a huge problem when digital transformation is a primary goal of law departments, law firms, and back-office operations.

On the plus side, many vendors do support interoperability and are helping firms like ours and companies like Black Hills IP deploy fully autonomous IP services that are revolutionizing the industry. These vendors include: Patrix (Patricia), CPA Global/Clarivate (FoundationIP, IPfolio, Inprotech), Computer Packages, Inc. (CPI), and AppColl. If you have one of these systems, for example, you can enjoy the full benefits of digital transformation in the IP industry. If your vendor or system is not on this list, you should consider demanding one be provided or switching as your IP system will be a major barrier to your digital transformation journey.

Lesson 4: Digital Transformation Requires Predictable and Reliable Data Exchange



In the first three lessons of digital transformation you learned about the importance of making it an ongoing effort vs a one-time event, that merely externalizing manual work does nothing to digitally transform your operations, and that system interoperability is critical. Today we will talk about how interoperability greatly increases inter-enterprise dependencies and therefore requires a different process for making system upgrades or changes that may impact downstream consumers of data when your organization enters into interoperable data flows.

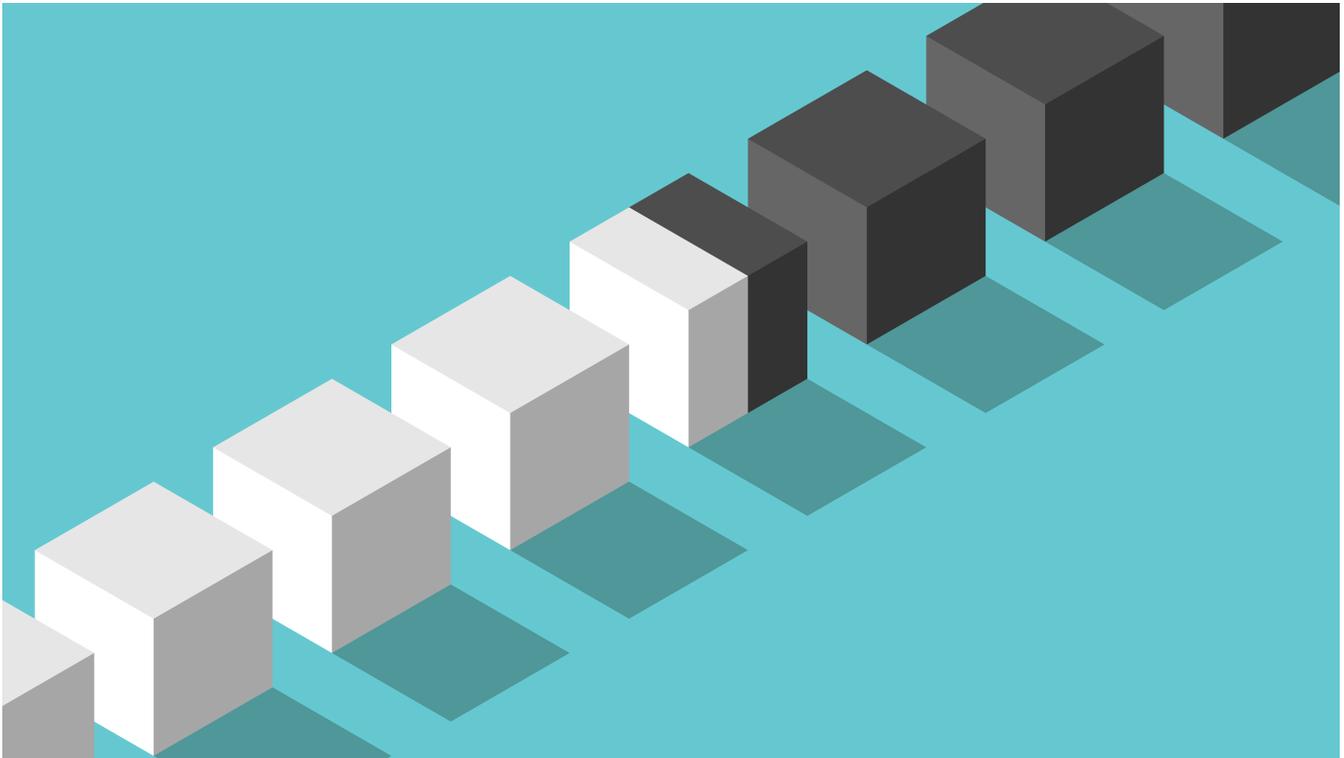
One good example of this is the critical need for Government entities such as the USPTO to provide adequate notice, lead times and testing before rolling out changes to data it produces such as the various PTO actions it generates and the bibliographic data it supplies to its customers or third parties. In times gone by the output of patent offices has been documents read and interpreted by humans. Adjustments or changes in the format of those documents could be easily accommodated by humans who in some cases would barely take notice of such changes, or quickly adapted to them, with no interruption of comprehension or throughput. Now, with PTO output automatically being downloaded and processed

through docketing and beyond, even small changes can stop a law department's processing of incoming PTO documents in its tracks until adjustments can be made. As labor is increasingly replaced by automation, manual processing of documents as a backup option becomes less and less feasible.

This same interoperability dependence holds true at all points in digitally transformed data ecosystems, affecting Government agencies, corporations, law firms and vendors.

So the lesson here is, in our digitally transformed world we always need to make sure changes we make do not result in downstream disruptions. This means giving plenty of advanced notice to allow customers to make any required changes and to test those changes and therefore avoid costly service interruptions.

Lesson 5: Robust Middleware is an Essential Component for Digital Transformation



In previous lessons, we noted the importance of interoperability in achieving digital transformation in the legal industry. This can be said to break down to two major components: 1 API's for each legal application to allow automated interactions with other applications in the ecosystem such as an IP management system, accounting system, patent offices, or cloud services like automated docketing or analytics; and 2 the middleware that can translate data exchange between the API's according to the requirements of each individual application and an enterprises' particular needs. Middleware simply means software that sits "in the middle" between two other systems. Sometimes this middleware performs simple tasks such as a simple relay of information from one system to another, and sometimes middleware can perform additional automation functions, replacing human labor that used to "sit in the middle." For example, patent docketing personnel receive data from a patent office, and use their knowledge and skills to make an entry in a docketing system that consists of data (such as a mail date and commands (such as a docketing code used by the receiving system to add a docket entry. Most of the time, middleware needs to "transform" data as it passes through it from one system to another. For example, if an accounting system sold by a first vendor needs to exchange data with an IP system from a second vendor, it is rarely

a simple matter of pulling data from one field and writing it into another. Often this data transfer requires data from the accounting system to be transformed and manipulated before it can be uploaded into the IP system, and furthermore for an API to work it needs to know what to do with the data, which is provided in the form of API instructions and commands. All this manipulation of the source data and instructions and commands to the receiving system's API is done using middleware. Another form of middleware is a cloud-based service that receives data from a first source such as the United States Patent and Trademark Office (USPTO), transforms it into a format that is compatible with a law firm or legal department docketing system, and also determines which docketing instructions or commands (such as a template or docketing code to launch) to provide to the docketing system's API. In another example, docketing events can be obtained from the docketing system and reported using e-mail to the appropriate recipients. This is typically accomplished with middleware that sits between the docketing system and the e-mail system, so the reporting can be customized to the needs of the situation. These are just a couple of examples of the tens of thousands of middleware components that glue legal systems from various different vendors together.

What this all boils down to is that while middleware may often be an obscure component of the legal system ecosystem, it is nonetheless essential for connecting up all the various systems that need to talk to each other but cannot do so directly. With an explosion of new software applications from many dozens of new high tech startups addressing the legal market, API's and middleware will lead the way to hook up all these systems in our digitally transformed future.

Lesson 6: Digital Transformation Requires Changes to Existing Process



Any law firm or department undertaking digital transformation will typically encounter a considerable number of process nuances and customizations that fly under the radar in a human executed process. We call some of these nuances “concierge services” because many are requested by influential attorneys “off the record” and implemented by staff without any notice to management, and typically without any thought given to countervailing considerations such as cost/benefit and quality implications. The result is that most law firm and department processes are riddled with low or no value process nuances that were requested or demanded by personnel who were only seeking to conform operations to their perceived needs using only their limited perspective as options. These sub-optimal customizations are frequently costly overkill and yield little benefit other than satisfying peculiar individual needs that are not important to the vast bulk of attorneys or staff. One example of this in the banking industry would be special treatment bank tellers might offer bank customers in a branch bank, such as filling out deposit slips in a certain way that requires special knowledge of the customer’s preferences. This level of service may not be documented anywhere and known only to one or two tellers among many.

As a result, perhaps one of the most difficult lessons of digital transformation is that unduly complex or nuanced “concierge services” are typically baked into most legal workflow processes and are becoming formidable digital transformation roadblocks, as these process customizations are not infrequently undocumented, much more complex to automate, and authored by influential individuals. If these nuances are required to be included, they can dramatically drive up the cost and time needed to digitally transform, or even derail it altogether.

So what can you do to overcome these “concierge service” issues? First and foremost, leadership has to make it clear that digital transformation is essential, and that no process is sacrosanct unless it is indispensable to getting the job done or serving the needs of the most important bulk of customers.

That means for example that customizations that are only for the convenience of attorneys or paralegals (and other only slightly less convenient alternatives exist) should be viewed skeptically, as well as “nice to haves” for customers who may not or do not perceive as high value, should also be discouraged, particularly if the customer is focused on cost reduction or is cost sensitive. This is not to say that better or new services should be discouraged - it is only that they should be designed and prioritized for implementation in a way that allows for maximum impact digital transformation.

Lesson 7: Innovations are a Natural Byproduct of Digital Transformation



Most of us come to the digital transformation challenge looking only at how to transform an existing manual process into an automated one. Our mind becomes laser-focused on the manual process with the goal to replicate it. A big reason for this is that need alone often presents a big challenge. Moreover, the extra up-front work needed to convert a manual process to an automated one consumes our concentration and energy, and blinds us to the many new opportunities for advanced capabilities that come along with the digital transformation.

Here are a couple of examples of digital transformations that led to big changes and opportunities. First, when law firms started digitizing correspondence (scanned and converted to PDFs) back around 1995, their members had access to all their documents over a network. When FoundationIP (now owned by CPA Global/Clarivate) was developed in the late 1990's, it made these documents available anywhere there was an Internet connection. This in turn allowed firms using it to retain the first off-shore IP teams in India to work on their files, and that in turn led to the growth of companies like Intellevate (now also owned by CPA/Clarivate), the first off-shore IP back office company. Now there is a very large industry in legal

outsourcing in India. So you can see the original accelerant for this was the simple digitization of a law firm's documents, which enabled them to be shared anytime, anywhere, and also the ability to divide up work across law firms and vendors across the globe.

Now the original innovation of digitizing documents is coming full circle as we here at Black Hills IP use an even deeper level of digitization and multiple types of AI to fully automate a large percentage of docketing transactions and semi-automate the rest. While the automation of this process has increased the speed and accuracy of docketing by an order of magnitude and more, that was just where the benefits began. The restructuring of the process and attendant data gathering and extraction has enabled a number of additional capabilities like real-time tracking and visibility of all docketing events from end to end, post-docketing verification, deep levels of bibliographic and other data verification, use of data not normally visible to a human docketer, automated translations, integrated analytics and alerts, and more. What started out as a simple goal of automating docketing unlocked many opportunities to greatly enhance what happens in the docketing process and really create a whole new category of service.

So, when you think digital transformation, think big!

Lesson 8: Digital Transformation Creates Enduring and High Value Career Opportunities



This lesson is a pretty simple concept to get. If your talented experts aren't spending their time doing work that can be automated, they will have time to do things that are too complicated for automation or require skills that automation does not provide.

Let's take, for example, US docketing. Black Hills IP is currently automatically docketing a very high percentage of all USPTO correspondence - this has already eliminated hundreds of clerk jobs and as more and more firms discover their service, many hundreds more of those docket clerk jobs will disappear. It's not a possibility, it's a certainty. But it's also a big opportunity.

Docket clerks are often some of an IP enterprise's most talented team members. They are experts in the intricacies of IP prosecution, have strong attention to detail, and are highly reliable. So, law firms and departments should start planning now for how they can be re-deployed in important roles where they can add more value than doing a poor job of trying to beat computerized automation.

A great example of how talent like this can be redeployed into new much more impactful roles is seen in the story of the “calculators” that used to calculate launch trajectories, depicted in the movie “Hidden Figures.” Rather than be sent packing when the modern computer came along, these brilliant women transformed themselves into computer programmers and pioneered that era’s computer automation boom.

We believe a similar transformation of our IP industry is underway, as professionals who used to do “robotic work” learn how to manage and program the robots, and gain higher paying and more impactful professional results.

This all starts with not putting your head in a hole and hoping automation doesn’t catch up with you. It’s coming hard and fast in docketing, and everyone stands to gain from it if they proactively engage with it vs. being left behind stubbornly believing the manually docketing present is not soon going to be history.

Lesson 9: Digital Transformation is a Game of Inches Where Incremental Improvements Add Up to Big Savings



One of the greatest investing lessons ever about power of saving comes from Warren Buffett. In his autobiography *The Snowball*, he said that when he purchased something, he didn't just look at what it cost him at that moment. Rather, he considered how much money he could earn on compounding interest if he saved the money instead.

You will do well applying this reasoning to digital transformation in a law firm. For example, let's say you could invest \$50,000 in order to save \$25,000 per year. If you take the short term view of that, you would never do it, but if you look at how much you lose over 10 years - \$200,000 - by not investing the money, you would make the investment every time.

Sometimes it doesn't even require an investment to save money, but maybe the annual savings don't seem worth the effort. But making four changes that save \$25k each by just using more efficient digital transformations, we get \$1M in savings over ten years. You can buy a lot of new equipment and software for that \$1M that otherwise would be totally wasted.

The point I'm trying to make here is that small digital transformation changes that save money or result in higher productivity aggregate over time to supercharge your organization. In fact, most of the time the most reliable way to do digital transformation is by chipping away at it in small bites, not making grand gestures, although where a sweeping change is available to be made and can be done in one fell swoop, it should be done. But those changes are typically few and far between. The rest of the time digital transformation is eked on one step at a time, bit by bit, until it compounds to large dividends over time.

So, if you have a chance to save \$25k per year, think \$250k instead, and get it done.

Lesson 10: The Most Important Ingredient of Digital Transformation is Not Technology – it is Committed and Strong Leadership



Of course this is the most obvious lesson of all, but it is worth discussing because digital transformation requires not just technical changes, but a budget, transformation experts or software, and changes in the way work is done, which requires a lot of time and energy to line up. Moreover, real digital transformation is inevitably disruptive to certain professional duties, and so that makes it even harder when you are a manager who cares deeply about your employees. This is where strong leadership is necessary to both champion the changes brought on by digital transformation and simultaneously help team members transition to new roles as need be. Given the complexity of the jobs now being replaced with automation, it is rare that a displaced professional can't find another place to apply their analytical skills, especially given the current shortage of qualified professionals. But this transition not infrequently takes time and effort and encouragement to make this happen.

However, leading the team through the transition is not all that a leader has to do. They first have to

make the decision to pull the trigger. That may involve taking some risk that operations will be disrupted while the transition takes place, and even the possibility the transformation will not be as successful as hoped, although well planned transformations will rarely net out a setback. And, of course, there is some loss of control when the vendor of digital transformation services or software takes center place in a process or operation, as opposed to human labor that is easier to redirect or turn on a dime. So, a leader is naturally worried that a bad digital transformation partner may not pan out as hoped and reflect poorly on the organization. But a committed leader with a reasonable plan will make a profound impact on the operations they manage if they lead the way and stay committed to achieving the end goal. These leaders will be rewarded with productivity gains and position their organization to take advantage of the many bounties a digitally transformed organization can harvest!

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