

Navigating the Digital Transformation Journey



Digital transformation is about more than moving from paper to glass. It's about the way that enterprises use technology and data to build a business ecosystem, thereby reducing risk, accelerating innovation, and driving growth.

The term “digital transformation” attracts a lot of hype. No wonder: the modern gleam of *digital* and the big-picture promise of that word *transformation* are irresistible.

So much of that hype is based on speculation and inflated claims, though. What LabVantage Solutions is interested in (and probably you too, since you found your way here) is the real world. What does digital transformation really look like, and how is it achieved?

This paper is your answer. It provides a hype-free account of three transformational projects undertaken in three intensely competitive industries. You'll meet a paperless biotechnology startup, a titan of the consumer goods industry, and a world-leading chemical company, each showing a possible way forward for others who seek the speed and agility of tech-enabled business harmonization.

What each has in common, of course, is LabVantage. Our domain experts have helped these and dozens of other companies “digitize to the core,” first by deploying the most flexible LIMS in the market and then by integrating that LIMS with their other business platforms, creating a frictionless exchange of insights from one end of the enterprise to the other.

That's what true digital transformation is about. It's more than moving from paper to glass; it's about the way enterprises use technology and data to build a business ecosystem, thereby reducing risk, accelerating innovation, and driving growth.

Whatever your starting point, we hope this paper helps you to define your own journey toward the innovative technologies you need to change the game inside your company.



WHAT TO EXPECT FROM THIS PAPER:

- Learn the truth behind the buzzwords: how does digital transformation position companies for accelerated innovation and revenue growth?
- Go inside three real-world companies who are in the process of successfully deploying an enterprise-wide digital strategy.
- Understand how an integrated digital system impacts lab workflows, from initial exploration through batch management and final reporting.

DECONSTRUCTING THE TERM “DIGITAL TRANSFORMATION”

Previous digital movements nibbled at the edges of inefficiency; the transformation we are witnessing today eats it whole. The key is using technology to undam the flow of data through an organization, giving business leaders the 360-degree view they need to identify patterns and trends, isolate risks, eliminate bottlenecks, and uncover concealed opportunities for innovation.

A good digital transformation strategy is uniquely influenced by a company’s own business objectives, but the best of them hold a few key attributes in common:

- **A strong digital strategy has champions at the top.** For a digital transformation strategy to succeed, it requires the active support of a visionary CEO and an executive leadership team willing to embrace outside expertise and empower those in key transformational roles.
- **Interconnection is its central aim.** A digital strategy supports the unimpeded flow of data across an entire organization, and deploys tools to help visualize and interrogate that data. Harmonization and standardization improves across all internal teams, enabling productivity and pipeline growth.
- **A good digital strategy is clear enough to compel forward action, but flexible enough to adapt and scale.** Successful strategies are developed not only in response to today’s competitive realities, but also as failsafes against future risks. Companies need built-in agility to respond to shifting needs and opportunities. This is perhaps most true in lab environments, where integrated LIMS, ELN, and LES functionalities enable consistency without limiting flexibility.

What’s at Stake?

According to IDC, spending on digital transformation projects will exceed \$2 trillion in 2019. Forty percent of all technology spending will go toward technologies that support these projects.¹

The question is: Why?

The big promise driving this surge of investment is profitable top-line revenue growth, enabled by incremental improvements that vary from one organization to the next.

These may include:

1. **Higher throughput:** Digitally sophisticated companies see a rise in efficiency, performance, and scalability. They are focused on speed across their entire development lifecycle, from R&D through product release, and they use data-driven insights to turn that speed into pipeline growth.

TRANSFORMATION STARTS AT THE TOP

For a digital transformation strategy to succeed, we know that harmony between executives, IT, and on-the-ground operations is vital.

To achieve harmony, we believe you should be intentional about who gets a seat at the decision-making table. Question your assumptions about the best way forward, using internal experts with first-hand knowledge of particular organizational realities as your guide.

“CIOs seeking to build and expand a digital business should work with each senior executive to quantify the extent to which their areas would benefit from digitalization. For example, work with a COO to define how much of their manufacturing operations should be digitalized and what benefits to expect.”

– Gartner, *Digital Business KPIs: Defining and Measuring Success*, James Anderson and Paul Proctor

REFRESHED: 10 APRIL 2019

PUBLISHED: 28 SEPTEMBER 2017

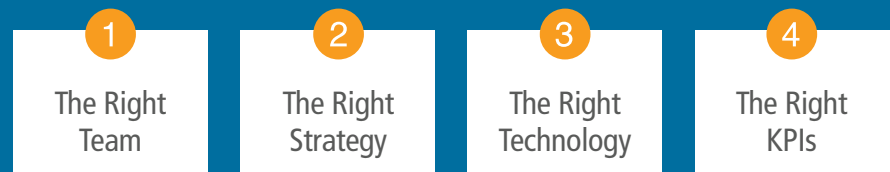
2. Lowered risk: Mistakes can carry a high price in today's world of complex product analysis. Those mistakes are likeliest when one process interacts with another, requiring data to leap across systems. Digital transformation projects enable seamless integration between these systems, limiting opportunities for costly errors.

3. Sustained regulatory compliance: As data becomes more complex and regulators turn their attention to industries not accustomed to heavy oversight (such as food and beverage manufacturing), a digital strategy that supports ongoing transparency and compliance is more critical than ever.

4. Improved quality: With fewer functional silos and a centralized data source enabling oversight, senior leaders have a sharper sense of ongoing patterns across the organization. This means they can proactively address problems and pull optimized processes from one area into another, supporting overall quality.

PLANNING FOR A SUCCESSFUL DIGITAL TRANSFORMATION

Components of a Robust Digital Transformation Project



1 Start With the Right Team

A successful digital transformation strategy depends on an organization's ability to balance the perspective of both inside experts (staff with frontline knowledge of the interdependent systems undergoing transformation) and external resources (experts with both domain experience and a record of sustained technological innovation). A visionary executive leadership team should oversee these complementary groups, propelling forward momentum and building a corporate culture that will welcome dramatic organizational change.

The bottom line: Who should help define your digital transformation strategy?

1. The top-level leadership team and their board of governors.
2. Those with a “transformation related” role, like the CIO and the IT team.
3. External consultants, technology partners, and trusted advisors.

How LabVantage Enables Digital Transformation Teams

Our experts work at the intersection of technical sophistication and domain-specific knowledge across multiple industries. We collaborate closely with executive teams to co-develop transformational initiatives that start with the lab and contribute to the enterprise-wide success of end-to-end digital transformation strategies.



“Building a native digital manufacturing site has been one of the most fun and challenging projects of my career. What made the project fun was working with the bold, relentless, and collaborative people that made it all possible.”

– ROLAND SMITH,
Moderna’s Sr. Director of
GxP Digital Systems

DIGITAL TRAILBLAZER: Moderna

This clinical-stage biotechnology company built a “digital native” facility that advances established drug development methodologies and introduces a much faster, more agile manufacturing cycle.

The investigational therapeutics and personalized cancer vaccines manufactured at Moderna’s new 200,000 square foot facility are unlike traditional drug products, which require a custom facility outfitted with large-scale bioreactors. Moderna is pioneering a potential new class of medicines called messenger RNA (mRNA), designed to enlist a patient’s own body as the bioreactor. This means the company can produce many investigational therapies inside a single manufacturing site, pivoting nimbly from one to the other and dramatically compressing their time to clinic.

Senior leaders knew at the outset that such a novel approach would require an equally novel digital strategy. They would need integrated systems pulling data from their research, development, and manufacturing processes, and they would need to smoothly bridge their informatics activities between the existing facility, where the analytical development (AD) team worked, and the new fully digital manufacturing facility.

The result, they hoped, would be a flat, continuous data exchange they could excavate for performance-related insights, helping support a large clinical pipeline and, ultimately, a new era of hope for patients with complex and unmet needs.

HERE’S HOW THEY DID IT.

They gave themselves permission to experiment. The Moderna team began by pressure-testing their digital strategy with the AD team in their existing facility. Away from the high-pressure environment of Good Manufacturing Practices (GMPs), they could explore the full capacity of LabVantage LIMS, learning valuable lessons and uncovering opportunities for harmonization, which they could translate to the new GMP space.

They trained staff on the WHY. In order to rally hundreds of workers behind their goal, the leadership team sought to demonstrate the significance of digital transformation – not just talk about it, but show it. They developed a plan to launch more than 100 cross-system integrations, carefully blueprinted to allow for an unimpeded flow of data from one end of the organization to the other and back. They showed workers what it meant to stay focused on their job at the bench while one click would reorder a consumable, alert the lab to a new sample, or download a result. Once workers experienced this shift in productivity and job focus, they could see why this change was necessary – and they could advocate for it.

They established a virtuous cycle of shared learning supported by integrated data. Over 7,000 events are monitored in real time at Moderna’s new facility, and all of that data serves to improve quality and efficiency within different but interdependent functions. The crossover between AD and QC is a good example; by using the LES in their LIMS to transfer methodologies and learnings smoothly from one to the other, both functional areas benefit from improved productivity and fewer redundant tasks.

They used digital tools to translate data into meaningful insights. Producing mRNA-based investigational therapies requires a high volume of complex, individualized stability studies. As just one example of how they harnessed technology to their advantage, the Moderna team used their LIMS to develop specialized interfaces and data visualizations uniquely configured to support this volume. In this and dozens of other examples, Moderna’s new facility advanced an agenda of data transparency, interconnectedness, and analytical exploration, using flexible best-in-class tools to realize their vision.

GARTNER INSIGHT

According to Gartner, “CIOs establishing leadership in innovation and strategic business change should develop a digital business transformation strategy that can map a course through external forces to produce a satisfying customer experience.”

“Starting with what’s impossible is counterproductive. But when it comes to effecting transformation, CIOs must realize their organization is not just transforming itself, but it’s also seeking to transform an environment it is operating in or is seeking to operate in. This means the organization will have to navigate through a system of systems – the combination of the motivations and the actions of the actors that are consistent with that environment.”

– Gartner, *Digital Business Transformation Strategy Needs a Change of Perspective*, Brian Prentice

REFRESHED: 31 JANUARY 2019
PUBLISHED: 12 SEPTEMBER 2017

2 Develop the Right Strategy

Some organizations are tempted to reboot everything all at once, but that “all or nothing” mindset is fraught with challenges, from the technological (ensuring all new systems and platforms are configured to work smoothly together) to the interpersonal (managing change among workers who may be fearful, resistant, or uncertain of their role in this new reality). Other organizations, facing the sweeping change required for true transformation, are uncertain of where to begin – so they never begin at all.

Finding a middle ground between aggressive goal-setting and a patient, incremental rollout plan is key. The first step is to identify a set of unique business objectives, which will provide the backbone for a smart, intentional path forward. To do that, executive teams must ask themselves:

- What do we need to achieve by undertaking this digital transformation journey?
- What people, processes, and technologies are not serving (or are under-serving) our potential as an enterprise? How can we empower those people, overhaul those processes, and introduce revolutionary technologies to accelerate our growth?
- Where can we add value? Where do we see opportunities to mine our data for insights that will help eliminate redundancies, replicate successes, and remove obstacles that impair innovation and speed?

How LabVantage Helps to Sharpen Digital Strategies

Labs are the “nerve center” of innovative organizations. As the main artery for carrying ideas from concept to production, they have a tremendous potential to lead a company’s overall digital transformation strategy, demonstrating the benefits of process optimization and automation using today’s best-in-class technology.

We help labs do just that. Our advisors work with senior teams to develop successful implementation strategies, based on which lab functions are best positioned to transition first. For example, many digital transformation strategies start in the R&D lab, where IT can test, configure, and learn from new LIMS technology in a smaller, more manageable environment, then carry those learnings forward to the broader enterprise.



DIGITAL TRAILBLAZER: A multinational consumer goods company

What happens when a centuries-old global company launches a digital innovation strategy?

This company's transformational strategy, currently underway, aims to build an ecosystem connecting more than 100 manufacturing plants and 15 R&D centers around the world. A key objective of this enterprise-wide strategy is to centralize their lab data in a corporate data lake so that researchers and other stakeholders can interrogate it using powerful AI and advanced analytics capabilities.

To get there, the company is following a few winning principles of true digital transformation:

There shall be no "Big Bang." They have carved their transformation strategy into achievable phases, which de-risks the whole process by enabling continuous learning and improvement. For example, rather than interfacing all lab instruments to their new LIMS right away, they selectively interfaced a few high-volume instruments at a time, measuring their success and tweaking their approach as they went along. This also helped to incrementally adapt their workforce to the change, increasing adoption.

Trust the experts. They approached this project with a learner's frame of mind, enlisting expert advisors and seeking to understand what worked (or didn't) in other transformational projects that had come before them. When adopting a new technology, they maintained as much out-of-box (OOB) functionality as possible, limiting customization activities and instead adapting their process where necessary.

Commit to the full potential of each solution. When the company reexamined moments of connection between different functions, they realized productivity was lost in the chasm between discrete tools and solutions. Take the handoff from R&D to QC, for example. Previously, researchers used a standalone ELN to prepare their formulation before jumping to a LIMS interface to send samples for testing. This process encumbered researchers with redundant data entry tasks, and it fragmented that data across two systems, impeding comprehensive analysis. They changed that by introducing LabVantage LIMS, which harmonizes R&D and QC activities with built-in ELN capabilities. The same LIMS also eliminates redundancies in the handoff to the manufacturing team, who could access the final formulation from the same interface – no more time spent interpreting a paper process from R&D to suit the production environment.

This company's LIMS system, a key component of their overall data transformation, aims to connect more than 15,000 users with each other in the future, supporting data transparency and insight from one edge of the company's global footprint to the other.

3 Identify the Right Technology

With the right team and a clear strategy in place, the next challenge is navigating a product landscape that's convulsing with change and innovation. Knowing which business technologies will add value and drive interconnectivity within a particular organization requires a detailed understanding of that organization's processes.

Logically mapping those processes based on the ideal flow of information through an organization is the first step toward identifying the right digital tools, but there's something important to keep in mind: choosing technology to suit a legacy process may hold you back from true and valuable transformation. Instead, consider flipping that paradigm: redefine your process based on available and best-in-class technology.

How LabVantage Helps to Strengthen Organization Ecosystems With a Highly Configurable OOB Solution

Organizations with home-grown or highly customized solutions, designed to fit a bespoke operational process, often find themselves stuck in a mesh of technology that's cumbersome to improve, update, or scale. In laboratories, heavy customization can also introduce compliance issues, particularly in today's active and highly vigilant regulatory environment.

We help organizations eliminate these risks and realize the potential of their digital transformation strategies by providing a LIMS that's highly configurable and uniquely cloud-ready. In fact, we were first in the market to offer an HTML5-compliant LIMS.

Our most successful customers use LabVantage LIMS as a driver for process change. Rather than changing the OOB technology with customization, they adapt their processes to suit a technology designed to support the industry's best and most efficient practices. We even offer purpose-built solutions, giving labs flexible access to LIMS functionality that's unique to their industry. This way, labs are assured of ongoing maintenance and regulatory compliance while still having the flexibility of a solution configured for their exact needs.

CHECKLIST: **How to Choose the Right LIMS to Support Your Digital Transformation Project**

If you're overturning a legacy lab informatics system, start by questioning your assumptions about what a modern LIMS can do. What's possible today is likely very different from what was possible the last time you reviewed your options. Most of all, look for a configurable solution that supports true integration and automation, freeing your lab workers to focus on complex, high-value activities.

Here are a few other factors to investigate while you interrogate different options:

- Global reach:** Will it work everywhere you need it to? Will it maintain compliance in different global regions? Think about your future needs, too: if you scale out in years to come, will it scale with you?
- Track record:** Is this a technology company that leads (or, at the very least, keeps pace with) the latest advances? Beware of solutions that are "hot" when they come out, but that age quickly.
- Implementation approach:** Does this technology company offer a consultative approach, or are they simply transactional? How will you know you're getting the most out of its product?
- Configurability:** Does the LIMS show maintainability? Will you be able to use it without having to write custom code, or will you need a large staff to keep it alive?



DIGITAL TRAILBLAZER: A world-leading chemical company

Over a century of steady growth has positioned this company at the top of the industry, but steady growth won't keep them there. Today's turbulent business world rewards only the boldest innovators, leaving little room for cautious, incremental change. To continue winning in the marketplace, this company needed to ignite their R&D activities with a new digital strategy. Here's how they did it.

They started with the fundamentals. Senior leaders looked back on a legacy of conservative IT investment and resolved to do things differently. They saw that their current infrastructure provided insufficient support for the company's research teams, so they developed a strategy that called for a new digital foundation, one designed to harmonize and accelerate their most ambitious R&D initiatives. They adopted LabVantage LIMS, in part because of its strong genealogy tracking capabilities that are key to scientific data management in the R&D world. These capabilities make it possible to think beyond their current way of working and lay the foundation for more advanced digital technologies like Artificial Intelligence, Machine Learning, Deep Learning, and Analytics. These advanced technologies are an essential part of the overall digital strategy, dependent on the LIMS to help collect and visualize experimental data from labs around the world.

Next, they redefined what's possible in the chemical industry. With their new LIMS-based digital foundation in place, the company's R&D teams had access to the real-time data they needed to prioritize the pilot projects that were likeliest to pay off. This compressed and optimized the company's overall scientific method, freeing their brightest thinkers to focus on their biggest ideas – ideas like in-silico experimentation, which borrows from the principles of quantum computing to simulate complex chemical interactions using a computer's semi-conductor chip. This means experimenting with the laws of physics to a degree that's never before been possible without a test tube.

The data flowing from such experiments could help this company's innovators address some of our planet's most critical challenges, but only if it's available for analysis. Thanks to this company's bold digital transformation project, it is, and it's already leading to amazing discoveries.

4 Measure the Right KPIs

As your digital transformation strategy comes to life, the best way to ensure its continued growth is to measure it. Every organization will have unique transformation metrics – the Key Performance Indicators, or KPIs, that track the success of a digital transformation strategy. The key is to ensure that your KPIs are clear, specific, and measurable, and that they map back to the business objectives which you sharpened in your strategic planning phase.

For example, rather than thinking about bridging research and production informatics, consider identifying an achievable threshold, like a measurable increase in production speed.

GARTNER INSIGHT

“CIOs seeking to build and expand a digital business should use digital business metrics to better inform business decision making. Good metrics should inform senior executives on the digital journey and influence decisions such as budget allocations, business process improvements, and necessary culture changes.”

– Gartner, *Digital Business KPIs: Defining and Measuring Success*, James Anderson and Paul Proctor

REFRESHED: 10 APRIL 2019

PUBLISHED: 28 SEPTEMBER 2017

Conclusion

Digital transformation is no longer a technology journey. It's a business journey that uses technology as its vehicle. Some companies born today will never know anything but a digital ecosystem, while others must apply herculean effort to overthrow a legacy of functional silos and redundant processes. For both, and for everyone in between, the journey's destination is the same: agility, innovation, and data-driven business growth.

Many begin their digital transformation in the lab, where a highly integrated and flexible LIMS deployment can accelerate data transfer and contribute to the broader analytics capabilities of the enterprise as a whole. This is where LabVantage is leading the way forward with the most flexible solution in the market, supported by domain experts who share the table with some of the world's boldest digital transformation project leaders. Together, we help drive transformation initiatives for startups and multinational behemoths alike.

FOR A CLOSER LOOK at how we've designed our technology to help labs lead successful digital transformation initiatives, visit [LabVantage.com/DT](https://www.labvantage.com/DT).

Considering a digital transformation project for your own organization? We can help you plan a successful implementation strategy. Reach us at lvinfo@labvantage.com to start the discussion.

REFERENCES

¹ Pucciarelli, Joseph, "4 Things Successful CIOs Know About Digital Transformation." CIO Magazine. Winter 2018; 17. Web. 22 Oct. 2019. https://images.idgesg.net/assets/2018/01/state_of_the_cio_01_ciod_winter_final.pdf



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ABOUT LABVANTAGE SOLUTIONS

A recognized leader in enterprise laboratory software solutions, LabVantage Solutions dedicates itself to improving customer outcomes by transforming data into knowledge. The LabVantage informatics platform is highly configurable, integrated across a common architecture, and 100% browser-based to support hundreds of concurrent users. Deployed on-premise, via the cloud, or SaaS, it seamlessly interfaces with instruments and other enterprise systems – enabling true digital transformation. The platform consists of the most modern laboratory information management system (LIMS) available, integrated electronic laboratory notebook (ELN), laboratory execution system (LES), scientific data management system (SDMS), and our advanced analytics solution (LabVantage Analytics); and for healthcare settings, a laboratory information system (LIS). We support more than 1500 global customer sites in the life sciences, pharmaceutical, medical device, biobank, food & beverage, consumer packaged goods, oil & gas, genetics/diagnostics, and healthcare industries. Headquartered in Somerset, NJ., with global offices, LabVantage has, for four decades, offered its comprehensive portfolio of products and services to enable customers to innovate faster in the R&D cycle, improve manufactured product quality, achieve accurate record-keeping, and comply with regulatory requirements. For more information, visit [labvantage.com](https://www.labvantage.com).

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