



Driving digital transformation with data science

Immense amounts of data are flowing into and out of today's businesses, but it's often difficult to know how to turn this data into actionable insights. Data science has incredible potential for businesses of all types to create models that find patterns in this data and use them as the basis for transformative software. From location sensor data and customer loyalty programs to predictive analytics that improve the customer experience, employee engagement, and operational efficiency, a world of possibility awaits organizations that can crack the data science code.

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Unlocking new opportunities with data science

No matter what industry you're in, data science can play a major role in helping to digitally transform your business—a goal to which more and more organizations aspire.

CIO defines digital transformation as “**the acceleration of business activities, processes, competencies, and models to fully leverage the changes and opportunities of digital technologies and their impact in a strategic and prioritized way.**” But more than just acceleration, digital transformation is about the need for businesses to outpace digital disruption and stay competitive in a rapidly evolving business environment.

Without doubt, data science needs to be a fundamental component of any digital transformation effort. Often described as a new frontier, “Big Data” is widely thought to have the potential to transform industries and to up-end business models that have been in place for decades. By looking for patterns in data and creating software that can regularly and reliably turn that data into actionable insight, data science can give companies an advantage that is difficult or even impossible for competitors to match.

This opportunity is why so many businesses are adopting data science; but as with all game-changing technologies, the main driver is already shifting toward necessity. Customer demand and other factors, like technology itself, are changing the concept of what's possible and making it imperative for companies to keep up. Here are four technologies that illustrate this reality.

1. **Machine learning**—Technology now makes it possible for software solutions to learn and evolve. Software with machine learning capabilities can produce different results given the same set of data inputs at different points in time, with a learning phase in between. This is a major change from following strictly static program instructions, like the models from the 1990s.
2. **Omni-channel architecture**—Because customers shop across channels and classes, decisions made in one class or channel have an impact on products in other classes and channels—whether it's pricing, promotions, staffing, inventory, or assortment decisions. With omni-channel architecture, all your channels stay in alignment.
3. **Cloud**—Companies are increasingly taking advantage of the elastic nature of the cloud and deploying this technology for the flexibility, agility, and affordability it provides. Cloud-based applications can provide your people with real-time access to information from anywhere in the world at any time. By replicating the same environment across the globe, multiple global environments remain in sync, and response time is optimized. Most importantly, because applications in the cloud are always current, always available, and highly scalable, the cloud makes continuous innovation an achievable objective.

Data science

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4. **Network visibility**— In a global economy, network visibility is essential; however, most systems today are only able to give you half of the picture. You can track where products are within your virtual “four walls” or outside of them within your network of suppliers. But getting a fully integrated picture has historically been challenging. Cloud-based collaboration platforms capable of automating hundreds of processes on a global scale are rapidly changing the definition of “visibility,” with companies on the cutting edge of this technology standing to make great gains.

Three principles for use

All of this technology produces vast amounts of data. How do you use all the data from these and other new technologies to make better decisions and improve operations? By making it accessible, meaningful, and actionable. Follow these three principles, and you’ll be on your way:

1. **Make data consumable**—Data science models—and the data they produce—must be easily consumable by the average user. You shouldn’t need a PhD to benefit. Having access to easily consumable, real-time insights and visualizations of complex sets of data can unlock new opportunities and revenue streams—and help improve customer relationships and your bottom line.
2. **Make data adaptable**—Models should be self-learning and highly automated, so users can get the most from them. The models must learn and evolve, so the data you get are relevant to your users today and in the future. The models and data also need to be accessible through your existing enterprise platforms, so everyone can easily get to them.

3. **Make data transparent**—“Black box” solutions that hide their functions from users or that can’t be re-used across your technology ecosystem are no longer acceptable. When users can’t justify or explain why they accepted a solution’s recommendation, they stop using it. Your users must be able to drill down to understand where the data behind the recommendation originated. When users understand the recommendation as well as the reasons for that recommendation, their experience is more meaningful.

Preparing your industry for a digital transformation

Data scientists at Infor® Dynamic Science Labs create models that find patterns in this mass of data and work with developers to build these models into Infor software. Infor Dynamic Science Labs is a group of scientists, mathematicians, economists, and engineers who are driving the next generation of enterprise software. They’re creating software that is smart, self-learning, and focused on the future. They work with customers and product managers to identify industry-wide challenges and then solve them using elegant but understandable scientific methods.



Some of the areas Infor Digital Science Labs is working in

1. CRM science

As part of the digital transformation driven by data science, Infor Dynamic Science Labs is building a CRM science engine that digests the immense volume of data flowing into your organization and advises you on what to do next. The engine predicts which customers are most likely to purchase; what they are likely purchase next; and whether they are at risk of leaving.

For industries where sales people reach out to individual customers, Infor Dynamic Science Labs is building a smart sales assistant tool. The sales assistant identifies which customers are the best leads for new revenue. It creates profiles on each customer, so that the sales person is aware of each customer's recent interactions and purchases. And, using the next likely purchase algorithms, the sales assistant identifies which products are mostly likely to be purchased next by a customer and why. Finally, the solution offers churn prediction, so you can identify your at-risk customers and work to prevent losing them.

For distributors with counter sales locations, the CRM sales assistant can alert the checkout staff to remind customers about likely purchases that they may have forgotten. If a contractor is buying replacement parts to fix a piece of equipment, for example, perhaps the sales person can suggest follow-on pieces or specific tools that could make the job easier—or save the contractor a second trip.

For retailers, CRM science can be used in a different manner. For example, instead of giving a customer who's checking out a coupon to use on their next visit, with opt-in loyalty programs, customers can receive coupons and recommendations as soon as they set foot in one of your stores or outlets. In the old way of doing things, customers might only receive a coupon for their next purchase when they're at the register, checking out. By sending them coupons and promotions when they're already in the store, you don't have to wait for that next visit for them to spend. CRM science can also enable you to allocate staff to store departments based on the next likely purchases of the people currently in your store, so you can match up the right sales people with the right customers. Or, if you know there are areas of the store where customers always have questions, you can be sure to have those areas staffed.

Whether you're a retailer, distributor, or manufacturer, when your sales people have additional information about a customer, they can provide the best service and help increase your revenue.

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2. Real-time supply chain monitoring and optimization

In the digital world where we now live, maintaining visibility into your global supply chain is essential to avoid costly delays and inventory shortages. Delays in Shanghai or Long Beach, for example, can affect operations all over the world. Traditional supply chain management tools have relied on analysts building complex, specific models to estimate shipment durations and arrival times.

With increased computing power and global supply chain data collected by GT Nexus, a cloud-based global supply chain management platform, Infor can more accurately model supply chain timelines automatically, eliminating the need for costly manual models and allowing you to detect disruptions in real-time and mitigate them. The GT Nexus network connects global companies to their partners, both onshore and offshore, and provides real-time visibility into order and shipment status, so brand owners can optimize their supply chain for greater agility, faster turns, and lower costs.

By combining machine learning with a Big Data analytics platform, you can better understand which delays are normal variations and which are true system-wide disruptions—like strikes or natural disasters. Because you can continuously monitor the data feed in real-time, you don't need to think about it. The platform will notify you if there is a problem, and give you a range of solutions. Your analytics system can then surface those delays and send you an alert.

When there is a disruption, you can dive into your affected shipments and see what the impact is for each of them. When you are integrating data across your entire business—you can develop a deeper understanding of what is truly important to you:

- How do these disruptions affect your business downstream?
- Which shipments are more important than others?
- What is the optimal tradeoff between faster shipping times and additional cost?

Using this deep knowledge about your business, you can get real-time suggestions on how to mitigate disruptive events in a way that is best for your business. That way you can secure alternate transportation before others can—like reserving rail chasses or truck capacity before it runs out. The data collected by GT Nexus not only helps you to detect disruptions, it allows you to confidently chart a course around these bottlenecks in your supply chain. When your employees have better information, they are more aware of potential problems and can plan accordingly.



3. Location-based inventory analytics

RFID tags and similar technologies have become much more affordable in recent years, allowing retailers, distributors, and manufacturers to potentially tag and search every piece of inventory in their stores or warehouses. Combined with sensors that identify the location of each tag, this technology allows you to collect a wealth of data that gives you real-time insights into the location of every item in your inventory.

In retail, you can use sensor data to assess the fit of items based on what is left behind in fitting rooms—learn what items people try on but never buy and determine whether there's a fit problem, for example. You can use this information to correct the style design, or to stop producing items that aren't selling and avoid unnecessary markdowns.

Location data can also be used to create an optimal store layout. You can figure out what people pick up and put down and where certain items do best. You can also use consideration data to determine cannibalization and recommend assortments. What if one product is replacing another? You can determine which product makes the most sense for your business to carry.

RFID and other sensors also create a lot of valuable insights about your warehouse inventory, as well. You can obtain accurate inventory levels without wasting valuable employee time counting. You can track each item in your warehouse to find misplaced items. Not only do you waste time having your employees look for lost items, but you can also miss out on sales. By tracking the movement of the inventory in your warehouses, you can also optimize the location and storage of your inventory—and find new opportunities to make your business more efficient.

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Identifying opportunities, improving decision-making

With Infor Dynamic Science Labs, you can transform the way you do business. We're using predictive analytics, mathematical modeling, optimization, forecasting, and more to help customers identify opportunities. Using data science, we can create and validate solutions that can improve your decision-making—so it's easier for your customers to do business with you.

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