



White Paper

The Five Essential Capabilities for Effective Next-Best-Action Analytics

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Retail store design and product placement have always fascinated me because of their effects on purchasing behavior. Studies show that up to 60 percent of consumer purchases in retail stores are unplanned.¹ Influencing additional purchases is therefore a vital activity for businesses. Some of my favorite examples that illustrate how retailers increase customer browsing and purchases include:

- Bestselling products like eggs or shirts are placed at the back of the store, exposing consumers to more products along the way;
- Products that complement each other and are likely to be purchased together, such as cleaning products, are grouped in zones;
- Customers encounter fruits and vegetables after walking through the floral department, associating them with the idea of freshness;
- Merchandise outposts slow people down to encourage more browsing; and
- Aisles are made attractive by providing visual cues at the middle or end to draw customers down them, exposing them to more products.

In online retail, which lacks a physical environment, analogous concepts related to browsing and purchase-driving techniques must be applied to increase spontaneous purchase activity. Each environment has advantages and disadvantages with regard to optimizing customer experiences and purchasing behaviors. Fortunately, with detailed clickstream data, an online retailer can drive even more fidelity in the understanding of customer behavior than a physical store retailer. In a widespread approach, online retailers provide recommendations for products that a customer is most likely to purchase based on the customer's previous purchase behavior and/or the purchases of similar customers.

Retail is just one example of the next-best-action (N-B-A) model, which includes recommendation engines but also applies to many more scenarios. N-B-A is a customer-

¹ Some studies suggest that more than 60 percent of purchases are unplanned (see Kollat and Willett 1967; Park, Iyer, and Smith 1989; and Heilman, Nakamoto, and Rao 2002).

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centric approach that improves decision-making capability at every customer touchpoint across channels and business lines. When customers contact your call center, come into your store, or click on your website, the interaction is fed through a decision hub that automatically presents their best next step—in real time—directly to the web visitor or to the representative working with the customer. This allows you to recommend the product or service the customer is most likely to buy or use, maximizing the value of that interaction.

There are five main capabilities that, when executed well, help you get optimal results from N-B-A:

1. **Real-time information**
2. **Design thinking**
3. **Machine learning**
4. **Embedded analytics**
5. **Data in the cloud**

Below, we'll take look at each of these five capabilities.

Turn insights into action. Now.

Many legacy information systems are designed to gather data, but getting it back out in a timely manner isn't always easy. Let's say your marketing department wants to promote a product through the sales channel. The problem is that your sales representatives may not know which customers have already recently purchased that product, which are most likely to buy it, and which would need greater incentives to purchase it. They need that information right now, but the data won't be batch-processed until Thursday. Without real-time insight into their customers' purchase history—and a predictive algorithm suggesting the optimal offer—the sales reps won't have the knowledge they need to take the next best action and reach their sales goals. The challenge companies face is setting up an optimal set of technologies and a data architecture to provide data and insight in real time. Legacy data and software systems often can't support the need. Unify provides architecture, design, and implementation of data-streaming services to our clients. This capability is key to helping companies access just-in-time, predictive data to significantly increase revenue while boosting customer satisfaction and employee productivity.

Design thinking puts humans first.

Becoming a data-driven N-B-A company is about more than numbers. It requires a cultural shift to design thinking and empathy for the user. In the old world, vital data needed to inform critical business decisions might be buried fourteen clicks deep, disorganized, and incomplete. That's insufficient for people's expectations for ease of use today.

Timely, actionable data must be presented in a context that guides the user intuitively to the next step you want them to take. In a customer-facing scenario, that might mean enhancing the online checkout process by enabling consumers to add a suggested product to their cart with a single click before purchase. Great design personalizes the customer experience and drives new revenue at the same time.



The Unify Data-driven Insights practice helps you:

- **Prepare for the future rather than looking to the past.** A next-best-action approach gives you a competitive advantage by anticipating your customers' most likely next step and making it easier for them to take it.
- **Create more customer value.** Bringing timely, relevant data to every interaction creates a more personalized and productive experience.
- **Gain an intelligence advantage.** Shifting data to the cloud creates company-wide insights that enable more groups to drive the next best action, maximizing revenue and productivity.



Design thinking isn't limited to customer-facing systems, however—it's critical to every aspect of your business. I helped a large high-tech hardware company create a system that used propensity modeling-based insights to drive service renewals and cross-sell opportunities. The technology aggregates customer firmographic data, engagement data, and purchase history to predict customers' likelihood of buying the company's solutions. Selected sales representative and executive end users were engaged to help discover needs and challenges, ideate innovative ways of displaying information, and provide feedback on iterations of the system. As a result of the end-user engagement, a data visualization dashboard now provides at-a-glance insights that sales reps can use easily to target the customers most likely to purchase—both focusing their time and generating higher revenue and margins.

Machine learning multiplies your efforts. Effortlessly.

Leaders in the application of N-B-A are employing machine learning capabilities to increase loyalty, improve customer engagement, and reduce costs. For example, in a paper about the Netflix Recommender System, Netflix's Carlos Gomez-Uribe and Neil Hunt explained:

Our recommender system is used on most screens of the Netflix product beyond the homepages, and in total influence choice for about 80% of hours streamed on Netflix. . . . Reduction of monthly churn both increases lifetime value of an existing subscriber, and reduces the number of new subscribers we need to acquire to replace cancelled members. We think the combined effect of personalization and recommendations save us more than \$1B per year.²

Historically, companies required specialized expertise in data science and statistics to build algorithms like the ones used by Netflix from scratch, a time- and cost-intensive effort. Today, many algorithms are publicly available from software libraries like TensorFlow, and can be easily repurposed for multiple uses and platforms. The challenge is less about the design of the algorithm itself and more about how to integrate product recommendations and insights into your business processes to effect change.

While few companies are as far along in customized machine-learning algorithms as Netflix, many free recommender algorithms can get you the level of accuracy required to be effective. Engineering expertise with a focus on implementation of machine learning is one of the most important skill sets. Unify's consultants apply both engineering and data science expertise to help you maximize the value of your data by leveraging open-source tools, internal systems, and external data to improve product or service recommendations. These recommendations guide people to take the next best action—accelerating your organization's ability to maximize customer lifetime value and loyalty.

Embedded analytics make your business smarter.

Once you start ramping up machine learning and artificial-intelligence capabilities, the focus shifts to optimization. How can you integrate this knowledge into your business

² Carlos A. Gomez-Uribe and Neil Hunt. The Netflix recommender system: Algorithms, business value, and innovation. ACM Trans. Manage. Inf. Syst. 6, 4, Article 13 (December 2015), 19 pages. DOI: <http://dx.doi.org/10.1145/2843948>



processes and systems to ensure that employees and customers know and act upon the next best action?

In the consumer-facing space, embedded analytics are responsible for those helpful recommendations that pop up when you're shopping on Amazon or browsing shows on Netflix. By embedding recommendations informed by an individual's profile, activity, and purchase history into their online experience, you expand opportunities to cross-sell or cross-promote products and services while also creating a more personalized experience for the customer.

Business Benefits of the N-B-A Model

- Increases customer purchases or other desired end actions
- Promotes natural engagement and a consistent brand experience
- Minimizes channel conflicts
- Targets resources to the best opportunities, reducing costs
- Optimizes every interaction for both customers and employee representatives

Within companies, embedded analytics make it easier for employees to engage customers and drive revenue when, for example, all relevant insight is available right within the customer relationship management (CRM) workflow. A large technology company client that I work with built a planning tool that guided their sellers' daily activities by presenting a prioritized action list based on artificial-intelligence-generated recommendations. This "smart assistant" prepares sellers for a more targeted engagement based on their customers' likelihood of purchase. These recommendations save them time and increase customer purchase and renewal activity. One of the keys to the success of next best action uptake by the sales field was the embedding of insights into the system that the sales representatives used as part of their existing daily workflow. No time was wasted searching another program for products to recommend or sell—the next best action was right in front of them, helping to increase adoption and, as a result, sales lift.

Take it to the cloud.

Next best action has moved from isolated experiments by data scientists to an integral part of customer-facing functions. Data-driven decision-making is no longer isolated to a few groups; rather, it's a team sport. Every part of the organization must align itself around intelligence. This can be accomplished most efficiently by moving a 360-degree view of the customer to the cloud—making recommendation-related data accessible all the time, anywhere, to anyone who needs it.

Bringing the next best action directly to customers and internal stakeholders requires a convergence of IT, data science, sales, marketing, customer support, technical support, and more. Unify looks at the entire organization to identify how and where cloud-based analytics can enhance your business processes. Putting that "intelligence advantage" to work in a customer-centric N-B-A model creates a strategic advantage that enables your business to learn and act faster than your competitors.



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