

A woman in a light green and white striped shirt is looking at a tablet computer. She is wearing glasses and has her hand near her chin in a thoughtful pose. In the background, another woman with blonde hair and glasses, wearing a blue shirt, is smiling and looking towards the tablet. The scene is brightly lit, suggesting an office or meeting environment.

BECOMING COGNITIVE IN THE AGE OF AI

The Hows and How-To's of Achieving AI Readiness

.|| NORTH HIGHLAND INSIGHTS

The following report draws on the results of a North Highland-sponsored survey conducted in April 2018. The survey identified the emerging trends in technology domains, along with the tactics and techniques that correlate with digital effectiveness. This report utilizes those insights to spotlight opportunities for organizations to capitalize on the promise of artificial intelligence (AI) with an approach that emphasizes technical bot design and deployment equally with cultural readiness and human-centered design.

Survey Participants

Technology & Digital

More than 300 director-level and above employees with leadership responsibilities in technology/digital categories at global companies with revenues in excess of \$1/£1 billion were surveyed in April 2018.

.|| KEY TAKEAWAYS

The problem: AI capabilities have the potential to improve or eliminate business processes entirely, reshaping skills, roles, and ways of working. Yet, North Highland's research shows that only 27 percent of organizations strongly agree that their employees have the skills to use AI solutions to meet intended business objectives.

The analysis: To capitalize on the promise of AI, organizations must be prepared to optimize a hybrid workforce of human and robot colleagues, emphasizing technical bot design and deployment equally with cultural readiness and human-centered design.

The solution: Based on our AI-readiness work with clients, and North Highland research conducted in April 2018, we have developed a strategic and tactical framework for maximizing return on AI capabilities which covers:

- **Data:** Cognitive organizations are intentional in collecting data ethically and minimizing bias and then strategically applying it to meet precise AI needs.
- **Culture:** Cognitive organizations apply a significant level of human effort to cultivate a culture that is primed to take full advantage of AI.
- **Processes:** Cognitive organizations design known, digitized, and adaptive processes that unleash the potential of AI throughout the enterprise.
- **Systems:** Cognitive organizations amplify and capitalize on emergent behaviors, combining data—both objective AND subjective—and culture to create breakthroughs at scale.

In spring 2018, North Highland worked with a global financial institution to develop a plan for a bot. The institution's objectives were straightforward: cost takeout and a streamlined customer experience within a very singular function at the bank. In testing, the bot worked well. So well that upon deployment, North Highland predicted that 20 percent of the employees within that function would need to be reskilled.

Suddenly, next steps were not so straightforward.

North Highland research shows that of organizations using artificial intelligence (AI), only 27 percent strongly agree that employees have the skills to use AI solutions to meet intended business objectives. AI has the potential to slightly improve a process or completely eliminate an entire business process. Either way, it will impact the way that humans work unlike any technology implementation in the past. A 2017 Gartner report predicts AI will create 500,000 more jobs¹ than it will displace over the next three years, opening new opportunities for medium-to-high-skilled workers.

No matter the scale of AI's impact, its successful implementation has as much to do with technology as it does with culture and organizational readiness. Even the most brilliantly engineered cognitive solution will fail within an organization that isn't prepared to adopt, support, and fully capitalize on it.

Enter the cognitive organization—one that is prepared to capitalize on the promise of AI by optimizing a hybrid workforce of human and robot



27% OF LEADERS STRONGLY AGREE THAT EMPLOYEES HAVE THE SKILLS TO USE AI SOLUTIONS TO MEET INTENDED BUSINESS OBJECTIVES.

colleagues. It emphasizes technical bot design and deployment equally with cultural readiness and human-centered design. Its philosophy around the human/machine partnership—and its treatment of the partnership—differentiates it from the pack. Its culture is focused on humans doing higher-value work and leveraging cognitive solutions that integrate process, data, and technology, fostering higher levels of organizational resilience and adaptability.

Cognitive organizations aren't born as such. Within this piece, we help clients across functions get smart by providing the leading characteristics of a cognitive organization so leaders, from IT to finance, can evaluate their capabilities and cultures and begin moving toward optimized cognitive solutions.

AMAZON'S COGNITIVE FLYWHEEL²: DATA, CULTURE, PROCESSES, AND SYSTEMS

While Amazon's products and processes have been infused with AI since the company's early days, it wasn't until 2014 that advances in machine learning, computer vision, speech, and natural language processing provided the tailwinds for consumer readiness.

Pitched and approved through Amazon CEO Jeff Bezos' signature "six-pager" proposal vehicle, AI-fueled products and systems began popping up across the company. Some of them involved rethinking current projects, like the company's robotics efforts and its huge data-center business, Amazon Web Services (AWS). Others pitched entirely new businesses, like a voice-based home appliance that would become the Echo.³ But they were all being designed and deployed in segregated silos across the company, and the company's culture of secrecy—referred to in Amazon-speak as "single-thread ownership," where a siloed team owns and ruthlessly protects innovations—was hampering its ability to attract top AI talent and gain momentum.

Alexa changed everything. Teams across the company began to realize that Alexa could be a useful voice service for their pet projects, too. Alexa was ping-ponged throughout the company with integrations into Amazon Music, Prime Video, Amazon Fire TV, voice shopping, the Amazon Dash wand for AmazonFresh, and AWS.

Amazon's cognitive flywheel began to pick up speed as the culture collaborated with increasingly connected Alexa-fueled innovations.

As consumer adoption grew, Amazon began amassing a wealth of data. As more people used Alexa across Amazon's full portfolio of products and services, the resulting data not only made each system perform better but also served as fodder for data scientists.

The flywheel began to spin faster.

Today, the company's AI expertise is distributed across many teams, with a unit dedicated to growing company-wide competence in machine learning. The systems now support continuous data-driven learning. The company still relies on six-pagers, but the AI capabilities and resources have been democratized, and its innovations are spinning at the speed and scale of AI.

And that speed is compounding. More data, more collaboration, more customers, more talent, more learning, and the flywheel is maintaining—even gaining—momentum naturally.

We believe that all organizations, no matter their AI maturity, need a cognitive flywheel, because while AI investments are growing from \$12 billion in 2017 to \$57.6 billion by 2021⁴, the ROI of those investments are not. 55 percent of companies report that "they have not yet achieved any tangible business outcomes from AI."⁵ Not even AI pioneers are immune to a painful AI learning curve. Early attempts to develop chatbots for Facebook's Messenger platform experienced 70 percent failure rates⁶ in handling user requests.⁷

Based on our AI-readiness work with Fortune 500 companies, and North Highland research conducted in April 2018, the following piece outlines the leading characteristics of cognitive organizations within their data practices, culture, processes, and systems—the four critical points in a cognitive flywheel. If you are leading the deployment and implementation of cognitive tools in your organization, this strategic and tactical roadmap is key to getting the most out of the promise of AI.

THE HOWS AND HOW-TO'S OF COGNITIVE ORGANIZATIONS

Cognitive organizations—those that will pioneer and capitalize on the promise of AI—will be exceptional in their ability to build ethical, sustainable design into their AI strategies from the beginning, as opposed to recovering from situations gone wrong. A bot is never just a bot; it is an integral part of a complex, dynamic human-machine partnership. It is a critical component of a broader brand and employee experience. And it must be reflective of—and responsive to—the brand’s look, sound, and feel, and the trust an organization has built with its employees.

Doing that well requires a holistic approach to AI and the collaborative optimization of data, culture, processes, and systems. The following section identifies what it means to be AI-ready within these categories and provides actionable advice for organizations ready to get started.

1) AI-Ready Data

More data is not better data. Cognitive organizations are intentional in collecting data ethically and minimizing bias, and then strategically applying it to meet precise AI needs. Moreover, they connect data across silos and create data platforms that are bot-accessible to solve increasingly complex problems.

AI'S ETHICAL WHITE SPACE

“Ethics” is a charged term. However, an ethical framework is necessary to ensure that the transformational impact of AI changes the world for the better. Ethics—the common rules of society that dictate good from bad behaviors—are all that separate the winners from the cautionary tales in the current AI white space. And they are the lifeline to human trust—in the brand, the data, the algorithms, and the outputs—that is absolutely required for AI adoption.

In our March 2018 white paper “AI for the Common Good,” we applied input from industry luminaries and new research to define the emergent use of AI in business today and validate North Highland’s five-part Cognitive Ethics Framework. With ethical data collection and management at its core, the framework helps organizations consider diversity, privacy, health and safety, prosperity, and humanity in order to minimize risk and fully harness AI’s potential.



How Cognitive Organizations Do It

- **Data is described.** Data is 1s and 0s to machines, but it is meaningful to humans. It describes an event, a transaction. It captures the context of our interactions with each other and with brands. Cognitive organizations organize and describe data so that its meaningful context is maintained as it is stored and used throughout the organization.
- **Data is widely accessible.** AI cannot use data it cannot access. Cognitive organizations create programmatic access to data sources.
- **Data is connected.** We often think of data as useful in completing a task, and with that goal in mind, collect it as small pieces of an event or transaction, or we break apart larger data sets and we optimize the way we store the smaller data sets specifically for these isolated purposes. Then we distribute ownership of the smaller pieces or create copies and store them in different data silos. In cognitive organizations, humans connect data sources across silos to enable AI to solve complex problems that require holistic data.



How You Can Do It

Advance from data ownership to data stewardship. Data stored in silos and applied in disconnected processes bottles up the power of described, accessible, and connected data. When an organization ties its data storage and use to tasks instead of outcomes and thereby incentivizes internal walled gardens, humans naturally tie data to their own effectiveness and they develop a mentality of data ownership. Data stewardship is a mental shift from personal data ownership to organizational data ownership. Humans who see themselves as data stewards see the value in making data in their charge accessible to the organization because combining data sets enables an organization to perform broader analysis and develop deeper insights that lead to new revenue streams or areas of cost takeout to improve efficiencies.

Creating connected data sets starts at the time data is collected. Create a shared understanding of the type of data being captured and how it is stored, and empower the organization at large to create connectable data sets. In putting this into practice, organizations can focus on standardizing, systematizing, and breaking down data silos with Information Management. Engage stakeholders across the enterprise to establish requirements and co-develop a roadmap for the use of data. Also focus on designing shared data collection and management processes—helping to ensure that the entire organization trusts the data used in AI.

Foster a shared consciousness about your customers and their interactions by using shared definitions and ways of describing and organizing data across the organization. This enables an organization to maintain relevancy to their customers and use AI to make decisions about customer interactions that leverage the competitive advantage AI can create. For example, establish a common language for managing your data, and design simple, relevant dashboards around business objectives—ultimately equipping teams with the insights they need to better meet customer needs.

2) AI-Ready Culture

All the six-pagers and Amazon engineers in the world won't ensure your cognitive solutions are adopted and optimized. Despite the technological nature of cognitive solutions, much of the work to design, build, and implement involves a significant level of human effort and a culture primed to take full advantage of it. Culture cultivation, as you may know, is a slowly evolving process.

There is no quick way to magically change culture overnight. Like a garden, it requires planting seeds and patient tending which, after many months, hopefully yields amazing bounty. Even then, it requires constant care in any context, let alone in the haunted grey areas of AI's great unknowns.

There is much work to be done. Our research shows that just 34 percent of companies using AI today strongly agree that employees feel AI is helpful in their day-to-day work. Only 32 percent of the same companies agree that AI tools are readily available for them to use in solving their day-to-day challenges.



How Cognitive Organizations Do It

- **They share a sense of AI purpose.** Teams share a vision for how they want to show up in the space of AI and, perhaps equally important, how they won't.
- **They trust.** Cognitive organizations collectively trust each other and their processes and support silo-killing through data sharing, shared AI expertise, performance transparency, and ethical decision-making.
- **They have grit.** Teams at cognitive organizations play the long game and don't pursue instant gratification or lose momentum at project hiccups.



How You Can Do It

The greater the shared purpose and enterprise-level trust in AI tools and processes, the greater the success. North Highland research shows organizations reporting the highest levels of AI success have the highest levels of engagement, with AI in use by more than 50 percent of intended users.

Shared purpose comes from building a cross-functional coalition. If you wait until after deployment to engage the broader organization, you'll always be pulling them along, as opposed to empowering them to adopt a collective sense of AI purpose. Start small but with an eye toward scaling, to learn lessons, gain wins, and build trust. Actively involve this coalition in an approach that tackles the technological design-build, and creates co-ownership of the solutions.

Anticipate and have answers to what-if questions and doomsday scenarios. This is especially important if you are applying these technologies to areas of your business that deal with compliance and regulations. Simply demonstrating forethought goes a long way in gaining trust.

Grit comes with experience. Celebrate small wins publicly and frequently to help fuel positive momentum. Simultaneously normalize the experience by fostering open communication around the realities of the discomfort, mistakes, joys, and pains of growing an AI-ready culture.



3) AI-Ready Processes

When forging a successful new partnership between humans and machines, changing the way that the company operates is critical—and even more fundamental than the discussions about organizational alignment that will also need to take place. Automating processes can improve efficiency but can't help much with effectiveness. Cognitive organizations acknowledge that they are constantly changing, and that their processes must be capable of quickly changing to meet unforeseen demands.

For example, consider the implementation of an AI-based employee communications system providing notice of updates to employee's schedules. Implementing this cognitive solution is, at its core, a fundamental change to scheduling operations. Without a known process supporting it—one that outlines the role that both humans and machines play in its successful use—the new solution is at risk for low adoption, technical flaws, or a combination of both less-than-favorable outcomes.



How Cognitive Organizations Do It

- **They make processes known.**
Cognitive organizations instill a collective understanding around AI-enabled processes. Further, employees understand the role they play in the human-machine partnership.
- **They make processes digital.**
Cognitive organizations apply digital to evolve or replace existing processes, informed by the consistent collection and analysis of data.
- **They make processes adaptive.**
Adaptivity is where the rubber meets the road in designing effective AI-enabled processes. Successful cognitive organizations apply insights from data to continuously improve operations.



How You Can Do It

Aside from the dusty documents and job aids, engage employees to build an understanding of how your people really get their jobs done. Then, design processes accordingly. Doing so captures the full value of AI by ensuring that it truly augments the way that employees work—and that employees embrace new processes, rather than work around them.

Continually measure for insight into the effectiveness of processes. Start by identifying existing data sources, along with where, when, and how new data should be logged in the context of a new AI-enabled process. Then commit to collecting and analyzing this data on an ongoing basis, considering both qualitative and quantitative inputs. In the case of the automated scheduling notification system, focus on both usage data and employee feedback to gauge effectiveness.

Build to change, rather than build to last. To realize the value of continuous learning, be prepared to change processes based on the insights from data collection and analysis. If, in the case of the automated employee notifications, application usage data indicates that adoption is low, a cognitive organization would revisit its process through the lens of AI enablement, taking a fresh look at the way that employees approach scheduling today, to build a process that's better integrated into ways of working.

4) AI-Ready Systems

The industry's go-to business models are old-fashioned, hierarchical networks of linear processes that worked in a world that was predicted three years out. Cognitive organizations don't model business problems within their defined, static systems but instead acknowledge that disruptive, sustainable change is happening outside the lines. Instead of managing the processes, they manage the changes instead. They amplify and capitalize on emergent behaviors, combining data—both objective AND subjective—and culture to create breakthroughs at scale.

We call this a living system. When you think of systems that are adaptable, responsive, and able to scale, Mother Nature provides the greatest examples. Take photosynthesis, for example, where the energy collected through leaves informs how the whole plant adapts its behavior to achieve its ultimate outcome of growth. A living system considers the full business ecosystem, pushes the boundaries of organizational capacity, and ultimately creates sustainable relationships between one component and the next in pursuit of the ultimate outcome.



How Cognitive Organizations Do It

- **They embrace diversity.** Cognitive organizations support multiple pathways that allow for the discovery of new ways of getting to the desired outcomes.

How North Highland Did It: Bringing a living system to life

Recently one of the world's largest companies approached North Highland, seeking a way to improve the employee experience within its internal promotion process. The company was growing exponentially, with thousands of new hires each year, and the static processes of old couldn't keep up. As opposed to going heads-down on making improvements to the current disparate system, our work started with a question about the users: Why were people not engaging with the formalized process? The answer to that question was acquired through insights into the cultures, laws, and social norms that impacted the experience of applicants, from Boston to Bangladesh.

- **They strive for cohesion.** Binding individual goals to a shared purpose gives the living system resilience.

Those diverse experiences had to be acknowledged and understood, and the company had to find a way to consistently deliver on its overarching brand promise while ensuring compliance. Our work focused next on identifying the elements of the experience that promoted continuity and were central to the brand.

- **They're optimized for adaptation.** Cognitive organizations develop a built-in learning capability. Qualitative experience data (as opposed to a singular process snapshot with fixed inputs and outputs) is applied to inform real-time pivots.

Next came data collection, both qualitative and quantitative, of how applicants were achieving their goals. How many applicants converted to employees? How was the experience? This input informed a precise strategy for adapting the process to the people, as opposed to trying to force the people into a rigid process. Setting up a system to iteratively collect and combine both kinds of data is key to staying ahead of disruptive behaviors and innovating for them.

- **Efficiency is king.** The results of diversity, cohesion, and adaptation are choice. Cognitive organizations choose from simple, validated paths, ensuring the most effective, relevant processes.

The company was left with a living system optimized to continuously evolve through data collection, analysis, and real-time adaptation.



How You Can Do It

When a living system is functioning successfully, there are four distinct characteristics that are enabled and act as barometers of the health of the system within the enterprise: diversity, cohesion, adaptation, and efficiency.

In the context of AI, let's apply the example of a sales team seeking to simplify information-finding and enable more effective customer interactions. Let's assume the team also wants to more effectively structure deals that efficiently set cost expectations to improve the customer experience. To do this quickly and to meet business demands, they employ bots to scale their experts and provide decision support. Doing that through a living systems approach would prioritize:

- **Diversity:** Create diversity by adding an information aggregation channel for sales agents to find information for customers.
- **Cohesion:** Ensure the bots, email, and other channels all coexist and provide multiple supported paths for finding information to solve customer challenges—and that everyone gets the same information no matter which channel they access.
- **Adaptation:** Over time, enable the bots to collect data that helps the business decide the most effective information to provide sales agents, and the best ways to build deals based on actual human behaviors.
- **Efficiency:** Bots find, aggregate, curate, and disseminate information faster than humans. Empower sales agents to rely on bots to help structure deals and make customer transactions more useful, more quickly.

TRANSFORMING AT THE SPEED OF AI

In the late 1990s, the internet was the focus of the future and full of fearful unknowns. Many companies adopted ad hoc internet divisions, but most failed to capitalize on its potential and fell apart amidst the dot-com bust. Those that rose from the ashes (notably upstarts in music, travel, news, and video) had transformed themselves to put the internet at the core of their operating models.

AI is the next revolution, poised to transform the world at a scope and scale the internet has only hinted at. Yet today, only 32 percent of organizations with AI in play strongly agree that AI tools are readily accessible to employees to use in their daily work, according to our research. Can you imagine today a workplace where just 32 percent of employees have access to, or even an understanding of, the internet?

Like the dot-com bust of yesteryear, those that don't transform themselves to operate at the speed of AI will be part of an AI bubble burst. AI cannot be an ad hoc add-on. Organizations that optimize data, cultures, processes, and systems will withstand, and even lead, the substantial change that AI means for modern business.

ABOUT OUR TECHNOLOGY & DIGITAL SERVICES

North Highland helps organizations improve performance and drive growth by aligning technology initiatives with strategy and culture. We do this by partnering with clients to embed digital solutions enterprise-wide, from solidifying a modernized, evolving IT capability, to designing highly custom applications for workforce enablement and customer engagement. Our solutions help business and IT leaders make informed decisions, foster internal collaboration, and apply cognitive technologies to solve challenges beyond human scale.

ABOUT NORTH HIGHLAND

North Highland is a global management consulting firm known for helping clients solve their most complex challenges related to customer experience, performance improvement, technology and digital, and transformation. We add value and support our clients across the full spectrum of consulting, from strategy through delivery. We bring the big ideas, then we make them real. North Highland is an employee-owned firm, headquartered in Atlanta, Georgia, with more than 3,000 consultants worldwide and 60+ offices around the globe. The firm is a member of Cordence Worldwide (www.cordenceworldwide.com), a global management consulting alliance. For more information, visit northhighland.com and connect with us on [LinkedIn](#), [Twitter](#) and [Facebook](#).

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¹ "Gartner Says by 2020, Artificial Intelligence Will Create More Jobs Than It Eliminates," Gartner, Dec. 13, 2017.

² A flywheel is "a heavy revolving wheel in a machine that is used to increase the machine's momentum and thereby provide greater stability or a reserve of available power during interruptions in the delivery of power to the machine."

³ "Inside Amazon's Artificial Intelligence Flywheel," Wired, Feb. 1, 2018.

⁴ "IDC Spending Guide Forecasts Worldwide Spending on Cognitive and Artificial Intelligence Systems to Reach \$57.6 Billion in 2021," IDC, Sept. 25, 2017.

⁵ "Predictions 2018: AI Hard Fact - Treat It Like A Plug-And-Play Panacea and Fail," Forrester, Nov. 9, 2017.

⁶ "Facebook Inc.'s Chatbots Hit a 70% Failure Rate," The Motley Fool, Feb. 28, 2017.

⁷ "Bot Check-In: A Year of Disappointment," The Information, Jan. 3, 2017.

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As Cognitive Solutions Lead for North Highland, Brian is a self-described scientist-builder working to understand how humans partner with machines to solve business problems. Brian is currently helping the world's largest brands build AI solutions to help their employees manage the complexity of operating beyond human scale. Brian and his team research, design, and develop AI solutions at the intersection of marketing, technology, and data.

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