

A man with a beard and mustache, wearing a dark suit and a red tie, is seated at a wooden desk. He is looking down at a laptop, with his hands on the keyboard. The background is a blurred office interior with large windows and green plants. The lighting is warm and focused on the man.

THE ROLE OF DATA AND ANALYTICS CATALYSTS: AGENTS OF CULTURE CHANGE

MANY ORGANIZATIONS ARE STRUGGLING TO EXTRACT TANGIBLE VALUE
FROM THEIR DATA, NOT REALIZING IT'S A CULTURE PROBLEM

To craft a culture of data-driven decision-making that reshapes their organization, Catalysts should employ the following four strategies: Demonstrate Value, Inspire Innovation, Establish Partnerships, and Nurture Strong Talent.



ABSTRACT

STUDY ON DATA AND ANALYTICS CATALYSTS

Organizations are experiencing a data revolution as they harness data to drive decision-making, gain efficiencies, and free up staff to perform more meaningful work. However, not all organizations have been able to fully take advantage of their data. Booz Allen conducted the first of its kind study on public and private sector Data and Analytics Catalysts, or leaders with titles such as Chief Data Officer (CDO), Chief Analytics Officer (CAO), Chief Data Scientist (CDS), or Director of Data and Analytics, to

identify how these leaders can be most effective in seizing the data revolution. Booz Allen confirmed that these leaders, not the creation of data or introduction of new technologies, are driving the data revolution through culture change. To craft a culture of data-driven decision-making that reshapes their organization, Catalysts should employ the following four strategies: Demonstrate Value, Inspire Innovation, Establish Partnerships, and Nurture Strong Talent.



LEADING THE DATA REVOLUTION

“Replace opinion with analytics, which is alien to the culture”

Public and private sector organizations are in the midst of a data revolution. The amount of data is growing by 2.5 quintillion bytes every day, generated through the behavior of humans, actions of machines, and monitoring of nature. It is not the creation of data, however, that is triggering the data revolution. The revolution comes when data helps executives make strategic decisions, managers drive efficiencies and improve performance, and staff focus on more meaningful work by relying on machines to make basic decisions.

Of course, leading the data revolution isn't easy. In fact, many organizations fail to fully take advantage of their data. One study shows that we analyze less than 0.5% of all data created.¹ Per Gartner's 2017 Chief Data Officer (CDO) survey, culture is the primary internal roadblock to generating value from this data.

Realizing the potential benefits of the data revolution necessitates an accompanying cultural shift. Many leaders look to technology or generation of more data, but data and technology do not lead change in an organization. People lead change. *Leading the data revolution is about being an agent of culture change.* The data revolution needs leaders who can inspire and evoke new thinking and ideas, shatter constraints, and bring their organization from a data

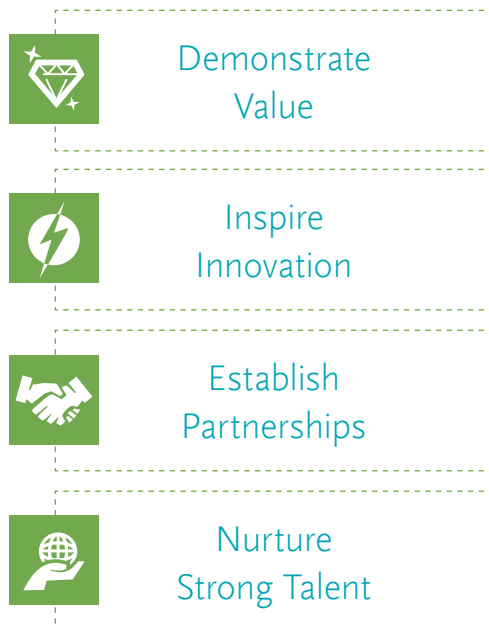
generator to a data consumer—crafting a culture of data-driven decision-making along the way. Data and Analytics Catalysts, who are leaders with titles such as CDO, Chief Analytics Officer (CAO), Chief Data Scientist (CDS), or Director of Data and Analytics, are in a position of authority and must take on the role of the inspirational leader to be successful at reshaping the organization. As one Catalyst put it, to be successful, he must convince people to “replace opinion with analytics, which is alien to the culture.”

The purpose of this paper is to show how Data and Analytics Catalysts can be effective in this role as change agent, distilled from a recent study that Booz Allen Hamilton conducted on Data and Analytics Catalysts.² We spoke to Catalysts across public and private sectors to capture their insights. We asked them about the critical success factors for their role and what opportunities they see ahead. Through these interviews and our experience, *we aim to help Data and Analytics Catalysts succeed in reshaping their organization.*

¹ Regalado, Antonio. MIT Technology Review, [The Data Made Me Do It: The next frontier for big data is the individual](#). May 3, 2013.

² Booz Allen interviewed 15 data and analytics leaders across 14 private and public sector organizations in health, financial services/regulation, defense, transportation, oil and gas, justice, and homeland security industry/mission areas. Each in-person interview focused on organizational alignment, functions, critical success factors, and challenges and opportunities ahead.

CATALYZING CULTURE CHANGE



Catalysts are “shifting the mindset of the organization to think about data as a function of their operational mission and to use that data to advance operational efficiencies”

Data and Analytics Catalysts are the face of the data-driven culture, but the CDO and related titles are new and unfamiliar roles. Thus, Catalysts must be proactive in clearly defining their role in the organization and helping all staff—frontline employees through executives—develop an increased level of comfort with data. Achieving this, of course, includes establishing well-defined but adaptive governance processes and technologies to facilitate sharing, access, and manipulation of the data in pursuit of solutions to business problems. But these governance and technological solutions are not sufficient to bring the needed culture change. We found that regardless of industry group, Catalysts harness the data revolution and change their organization's culture using the following four strategies:

DEMONSTRATE VALUE

Catalysts change peoples' minds about data and analytics by selling the benefits up, down, and across all levels of the organization.

Catalysts appreciate that their very existence depends on their stakeholders' understanding and recognition of the need for data and analytics to make better decisions. That is particularly challenging when, as one Catalyst noted, “99% of the organization thinks analytics is Excel with descriptive statistics and they throw around buzz words without a clear understanding of the meaning.” Coupled with an environment where much of the Catalyst's work takes a long time to show results (e.g., establishing a data governance standard), Catalysts must prioritize “marketing” use of data and analytics by demonstrating its value quantitatively or qualitatively. Showing by doing can be the most effective.

For example:

- “Marketing” the value of data-driven decision-making ranged from walking the halls informally discussing analytic opportunities with colleagues to going on a roadshow and more formally selling the benefits of data and analytics.
- By showing how their models more accurately estimated performance (within 0.5% of the target) when compared to experience-driven hypotheses, executives in one organization started encouraging staff to use the algorithm to set performance targets across the company, changing how the organization managed performance.

Catalysts should work directly with the business/program staff to show that when data and analytics are integrated with expert judgement from the start and not as an afterthought, they are more likely to achieve productivity and cost savings and more adaptable policies. Catalysts are “shifting the mindset of the organization to think about data as a function of their operational mission and to use that data to advance operational efficiencies.” By proving the value of data and analytics, Catalysts gain critical buy-in to continue their work throughout their organizations. For example:

- Evidence-based policymaking helped some agencies avoid being caught flatfooted, which would have forced reactionary responses to inevitable changes.
- When one agency's Catalyst began releasing granular cost information to inform the public (e.g., cost of a service is X for one provider and Y for another), it represented a shift from providing data to researchers to providing data that consumers can use to make informed decisions, which was a huge accomplishment for the organization.

“It doesn’t matter what we achieve in the community —we have to demonstrate it upstairs”

- One company's Catalyst demonstrated approximately \$300,000 cost savings by highlighting lower cost product alternatives to the purchasers in an easy-to-use visualization tool.

Convincing stakeholders to make up-front investments in unglamorous, yet critically important, initiatives, such as data governance and management, is a difficult task. Catalysts can convince stakeholders of the importance of confronting their data challenges by highlighting costs associated with inaction. For example:

- Several organizations addressed the challenge of quantifying the value of data governance by estimating the cost to change systems to either address historical issues clearly caused by a lack of data governance or by estimating the cost to bring systems in line with the standard (i.e., technical debt).
- One agency's Catalyst showed how unconstrained growth of 28 systems centered on a single database, resulting from a lack of data governance, contributed to significant maintenance and replacement challenges that could have been avoided.
- One company's Catalyst enabled better and faster decision-making by bringing together disparate data (largely in Excel) in a single repository, avoiding a \$50 million analytics software purchase.

Clearly articulating the impact of the Catalyst's work is key to gaining buy-in and support across the organization, especially from leadership. As one Catalyst said, “It doesn’t matter what we achieve in the community [with analytics]—we have to demonstrate it upstairs.” Catalysts can show real impact on the success of their organization by demonstrating value of data and analytics to stakeholders at all levels.

INSPIRE INNOVATION

Catalysts accelerate change by taking prudent risks that prioritize experimentation and quick demonstration of success.

Catalysts inspire new ways of thinking through a “fail fast, fail forward” mindset that rewards iterative product development and learning gained from experimentation. Catalysts use their domain knowledge and partnerships with willing organizations to identify analytic opportunities and execute analytic prototypes, iteratively showing successes (e.g., faster decision-making, shortened product delivery times) and cultivating demand. This prototyping approach inspires other trusted leaders and experts to “market” the value of data analytics, expanding the Catalyst's reach. For example:

- One company's Catalyst tells her staff “not to try to build the most complex mouse trap or most precise model, and instead build, test, and learn in short sprints.”
- Multiple organizations found taking a prototyping approach requires having multiple projects running at one time to keep the momentum going when they inevitably encounter roadblocks.
- One department's Catalyst found success in conducting multiple rounds of prototypes with the same stakeholders until they become believers, scaling the Catalyst's marketing power with new change agents and reinforcing the value of data and analytics.

Catalysts must strike a balance between following established practices and disrupting how things are done today. The right balance may be driven by an assessment of acceptable risks.

For example:

- One agency's Catalyst worked with his Chief Information Officer (CIO) to identify open source tools they could use with a subset of data without going through the traditional approval hurdles, so they could prove its value quickly and justify further resource investment.
- One company's Catalyst defined the desired innovation approach as “the environments and governance that need to be in place to allow for data science innovation.” This approach establishes both the necessary incentives and guardrails for successful innovation.

Challenging the status quo can be a slow and frustrating process, so Catalysts need to provide a creative and educational outlet (e.g., incubator, training curriculum) for both experienced and budding data and analytics practitioners across the organization, to test hypotheses and learn new techniques with minimal constraints. These projects may start as grassroots but as the organization's data maturity evolves, these innovation projects can grow into larger, sustained efforts that go beyond small pockets of individuals. For example:

- Multiple organizations stood up training programs, allowing staff to continue honing their craft and building skill sets for future data and analytics needs.
- With the help of leadership buy-in and a focus on innovation, 50% of one organization's analytics projects are innovation-focused, compared to only 10% the year before.

Successful Catalysts inspire innovation by creating an environment that encourages experimentation with data and analytics and provides a path to scaling the results.

“Identify the problem, get the data, find the right tool”



ESTABLISH PARTNERSHIPS

Catalysts establish themselves as trusted partners, engaging stakeholders in the data and analytics process and building buy-in along the way.

Catalysts must establish themselves as partners in data and analytics, not just providers of data and analytics services. Multiple Catalysts mentioned that establishing a partnership across the business, information technology (IT), and data and analytics teams is key to building trust in analytic results. When a customer makes a precise request, such as a dashboard to present data, a service provider would deliver just that. Catalysts go a step further, setting themselves apart by not only delivering what was requested but also working to understand the problem's root cause and coaching the customer on how best to approach that problem using data and analytics. This collaborative engagement helps advance the organization's data and analytics maturity. Given the resource-intensive nature of this engagement, Catalysts must prioritize investment of time and resources where they can get the greatest reward quickly. Catalysts should also look beyond the standard technology support by partnering with the CIO/IT to provide technologies that best support the business problem. For example:

- One department's successful order of operations is “identify the problem, get the data, find the right tool.”
- One agency's Catalyst helps stakeholders understand the partnership model by describing the solution traceability (e.g., how a product gets passed to production), with the business playing a stewardship role, particularly once the product is mature and then once it is retired.

- If a stakeholder is not willing to collaborate to create the most effective solution, one department's Catalyst provides what they asked for and moves on to someone else, because ultimately that stakeholder will not be a strong partner in achieving the cultural change.

Communities of Interest or Practice, working groups, and governance bodies are helpful ways to engage stakeholders with their data. For example:


- One company's Catalyst built partnerships by establishing working groups that can be collaborative and iterative, helping the business think about data differently. When she established a data governance standard, she and her team could have developed it internally in a short time, but she instead decided to have the working group develop it over the course of 90 days. Once it was ready, she facilitated a rollout in which her team held business owner's hands through the self-assessment, helping them identify gaps and a remediation plan. Now, the business owners are responsible for keeping the assessment current and are believers in the Catalyst's mission.

Establishing partnerships builds trust, enables more effective solutions, and generates stronger advocacy that delivers dividends long after an individual project is completed.

NURTURE STRONG TALENT

Catalysts expand their reach and impact by supporting the growth of data and analytics minds across the organization.

For Catalysts to achieve the cultural shift to data-driven decision-making, they must nurture a team with an analytic mindset that can both execute the work effectively and



The presence of Catalyst teams throughout the organization helped raise the overall data and analytics IQ

help raise the level of data and analytics knowledge across the organization. Catalysts need to focus on the talent needs of the organization, whether it is their own team or a team in another part of the organization. This is especially important knowing that the business units may not make the needed investment in data and analytics talent. Strong talent will support expansion of data and analytics across the organization, the need for consistency in data and analytics work, and the budding analysts looking to expand their skill sets. For example:

- In one department, the data and analytics team may be called on to do much of the heavy lifting, while the Catalyst focuses on “marketing” the team’s value and winning over naysayers. The quality of the team can mean the difference between empty promises and a successful project.
- The presence of a Catalyst’s teams throughout the organization helped raise the overall data and analytics IQ and made it possible for business units to ask questions of the data themselves (i.e., self-service analytics).

Catalysts recognize that executing data and analytics functions requires a mix of skill sets that can almost never be found in a single person and may include individuals that do not report directly to the Catalyst (e.g., data scientists embedded in business units, software engineers in the IT shop). The combination of skill sets creates a “bridge team” that can cover most aspects of the data and analytics lifecycle and help others in the organization grow their own skills. For example:

- Organizations see the importance of the following skill sets: data science, data architecture/engineering, strategy/operations, domain expertise, governance/controls, and software engineering.

Catalysts should assess their talent needs and gaps both when standing up the organization and as it evolves. This drives decisions on who you need, how you get them, where you need them, and how you keep them. Catalysts recognize that building the right team, particularly with limited financial resources, requires creative strategies to addressing talent gaps.

For example:

- To address hiring limitations, several organizations grew talent from within, borrowed from other parts of the organization, or required an evaluation period when hiring to confirm fit.
- One company’s Catalyst is responsible for the data science training curriculum across her business unit and she regularly engages with staff via blogs, articles, and brown bags. She also works with business leaders to identify talent that could grow into data and analytics roles and builds development plans to help them learn new skills (e.g., by tinkering around on the weekend and formal training).

Taking this initiative to nurture strong talent equips Catalysts to tackle the culture change needed for their organizations to thrive in the 21st century.

Each of these four strategies directly contributes to the organization shifting from a culture that does not understand the value of data to one that proactively engages with data and pursues analytic opportunities to drive decision-making. This culture change, led by Catalysts, feeds the data revolution that empowers organizations to make more strategic decisions, achieve efficiencies and improvements in performance, and free humans to do more meaningful work.

WHAT'S NEXT FOR CATALYSTS TO LEAD THE DATA REVOLUTION

The next step for Catalysts to lead the data revolution is to assess where they stand in building their organization's capacity for data and analytics, keeping in mind the four strategies described above. Success comes from the ability to take a holistic view that considers Data, Analytics, Culture, People, and Technology elements. Catalysts do not necessarily own each of these elements, but they are responsible for collaborating with others to address each one on the journey to becoming data-driven. Below is a framework for Catalysts to assess and analyze their organization's data and analytics capability through implementation and beyond.

During the data revolution, Catalysts will face different challenges, depending on their role and responsibilities, as well as how far along their organization is in its data and analytics journey. Booz Allen's "Data and Analytics Catalyst Playbook" is a useful resource, arming Catalysts with tailored solutions to help them address these unique challenges. Catalysts must objectively assess where their organizations stand across these elements and measure progress against existing gaps. A culture that embraces data and analytics must be supported by identified analytic opportunities, experienced data and analytics talent, and wide availability of data and technology. With each of these elements in place, Catalysts can empower their organization to fully embrace the data revolution and reap its benefits.

Data		<ul style="list-style-type: none"> Optimizing the organization's ability to collect, manage, govern, secure, and access data.
Analytics		<ul style="list-style-type: none"> Gaining insight from data, and turning those insights into actions that advance organizational objectives.
People		<ul style="list-style-type: none"> Finding, motivating, and retaining the right talent with the skills needed to support data and analytics efforts.
Technology		<ul style="list-style-type: none"> Identifying the best ways to use new and existing technologies, including applications, data platforms, and infrastructure to enable data and analytics.
Culture		<ul style="list-style-type: none"> Ensuring the appropriate organizational mechanisms are in place to institutionalize evidence-based decision-making.



CONTRIBUTORS

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WE'RE HERE TO HELP

To learn more about how we can help your organization along its data and analytics journey, visit www.boozallen.com/catalyst or contact:

Ezmeralda Sager
Vice President
703-377-6269
Sager_Ezmeralda@bah.com

Patrick McCreesh
Principal
703-377-9072
McCreesh_Patrick@bah.com

Susan Michener Johnston
Lead Associate
703-927-3055
Johnston_Susan@bah.com

Alexandra Decknick
Lead Associate
202-346-9519
Decknick_Alexandra@bah.com

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