A leading technology and consulting firm, Booz Allen Hamilton has long made solving its clients’ toughest problems its own mission, working to be their essential partner. And now with growing capability in next-generation analytics and data science, in addition to leading capabilities in simulation and optimization, Booz Allen is at the forefront of helping organizations capitalize on their biggest natural resource: their data.

A Fortune 500 company with offices in the United States, Europe, the Middle East and Asia, Booz Allen draws on its 100-year history as a leader in management and technology consulting to bring the power of analytics to bear for its clients.

With more than 300 operations research professionals and 500 data scientists and analysts in its next-generation analytics group, Booz Allen has developed solutions for a wide range of clients, including federal, defense and commercial clients. In addition, Booz Allen has contributed to the growth of the discipline with new tools, methodologies and approaches to harnessing the power of data.

Booz Allen has created a market for data science as a discipline with the understanding that as organizations continue to digitize their operations, opportunities abound for extracting value from their growing volumes of data. By mastering its pioneering approach of applying advanced mathematical techniques to data, Booz Allen has been a first mover in unlocking new insights to solve its clients’ most complex, multifaceted problems. Simultaneously, it has built internal and external communities of practitioners who are developing a market that, 10 years ago, simply didn’t exist.

Company History

Genuine core values are timeless. For 100 years, Booz Allen Hamilton has embraced the core consulting values penned by its founding partner, Edwin Booz: Start with character, intelligence and industry. In 2014, as the firm celebrated its 100th year in business – and now, in its “second century” – these characteristics remain constant in BAH’s continued delivery of expert strategy, technology and engineering services.

Booz Allen’s long history of helping organizations optimize their operations dates back to its earliest engagements with Walgreens, U.S. Gypsum and Montgomery Ward & Co. The company’s prowess in helping clients make the most of their data began with helping the U.S. Navy streamline its bureaucracy and quickly double its forces in advance of World War II. Booz Allen coined and defined some of operations research’s most common terms, including “PERT,” “critical path,” “supply chain” and “supply chain management.”

In 1957, the U.S. Navy’s Special Projects Office (SPO) asked Booz Allen and Lockheed to help organize the Polaris nuclear submarine project so that the missiles it fired would be ready when the submarine launched. Over a lunch in Washington, D.C., the SPO’s deputy and a Booz Allen partner developed what would become known as PERT – the Program Evaluation and Review Technique. PERT was based on a critical-path framework – a timeline-style diagram that showed all the different activities in parallel, with the “critical path”
Booz Allen has a history of helping clients take on their biggest data challenges. In industries as diverse as retail, pharmaceuticals and a variety of federal agencies, Booz Allen has brought the power of data to mission-critical issues.

**Improving public safety with analytics:** In fiscal year 2008, Congress requested that U.S. Immigration and Customs Enforcement (ICE) make enforcement and removal of criminal aliens a priority. To meet this mandate, ICE needed to improve its technology, processes and infrastructure around enforcement of aggravated and violent criminals, while creating greater efficiencies within the agency. Although ICE had a longstanding data collection process, the data was often not used effectively to inform strategic or operational decision-making. ICE turned to Booz Allen to figure out how to make the most of its data.

Booz Allen found creative ways to identify and remove more criminal offenders per dollar spent. These models enabled ICE to statistically estimate the population of criminal aliens, optimally schedule the deployment of new technologies, and maximize the utilization of transportation and detention space to increase removals. To date, ICE has more than doubled its criminal alien removal at lower cost, leading to greater public safety for the American people.

Booz Allen merged its analytics capabilities with its expertise in change management to advise on decision-making.
As further recognition of Booz Allen’s unique analytics capabilities, the Analytics Section of INFORMS awarded its inaugural Innovation in Analytics Award to the firm.

Accelerating the pathway to new drug discovery: In previous decades, the pharmaceutical industry enjoyed significant growth, prestige and profit, capitalizing on extraordinary advances in medicine and technology and the emergence of new markets. But due to the changing nature of healthcare, that success has slowed.

Over the past few years, increasing pressures on the industry such as the need to reduce healthcare costs, greater regulations and increased competition has fundamentally shifted the way companies must operate. And when it came time for a leading global player in the pharmaceutical industry to reshape its model for doing business, it turned to Booz Allen to help them mine their data for operational efficiencies.

Booz Allen’s data science insights have accelerated the drug discovery process for a leading global biopharmaceutical company. Booz Allen created a platform and algorithms to allow scientists and decision-makers to use 30+ years’ worth of rich data on pharmaceutical compounds, data that had been under-utilized and inaccessible. This allowed its client to make better portfolio management decisions, reduce unnecessary and duplicative experiments, while allowing the company to focus on high-value, innovative biopharmaceutical compounds.

Identifying the real value of promotion campaigns: Companies spend hundreds of thousands of dollars on promotional campaigns designed to gain consumer loyalty and repeat business. But attributing the return of these marketing efforts continues to be a difficult task. When one of the world’s largest hotel chains sought to quantify the real return on its investment, it turned to Booz Allen’s data science team.

While conventional statistical methods have worked sufficiently for analyzing the impact of promotions on large customer segments, many modern marketing programs must drive multiple-purchase objectives, requiring more precise arbitration between custom offers tailored specifically to individuals.

Booz Allen’s data science insights have accelerated the drug discovery process for a leading global biopharmaceutical company.

Using Bayesian Belief Networks (BBN) as an alternative to state-of-practice linear regression modeling, Booz Allen was able to help the client quantify the direct impact of its promotion on each of its individual customers, and subsequently target only those customers for whom the promotions would have measurable influence. As a result, the hotel chain reduced “unsubscribe” rates by one-third and increased campaign ROI by 40 percent with fewer “treated” customers.

Building the Discipline

Booz Allen’s commitment to data science and analytics, however, doesn’t stop with delivering new solutions for clients. As the firm has grown its organizational focus on data science, it also launched “The Field Guide to Data Science,” a foundational document that is widely regarded throughout government and industry as the definitive guide to the emerging discipline. Since its introduction in 2013, the U.S. Department of Defense has adopted the Field Guide as its definition of data science. The Field Guide is the most requested piece of technical content provided by the firm.

Dedicated to enhancing data science capacity and enabling an analytics-driven culture within the firm, Booz Allen also created the Data Science Competency Model, which encapsulates the knowledge and skills necessary for successful data science job performance. Benchmarked against Booz Allen’s own Data Science team, it is the first such model on the market, and the U.S. Department of Defense, the world’s largest employer, currently bases its data science talent procurement on the best practices that the model outlines.

Building on the success of the field guide and competency model, in 2014 Booz Allen launched Explore Data Science, a self-paced web-based data science course that teaches common data science techniques through interactive content in an immersive game environment. Geared toward data science experts and novices alike, the course generated 500,000 impressions in the four days following its launch at the Strata + Hadoop World Conference.