

# cracking the code: talent management by data scientists for data scientists

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recruiting, growing, and retaining  
a data science workforce

NOVEMBER 2016

Booz | Allen | Hamilton

# Data generation is expected to grow 40x between 2010 and 2020<sup>1</sup> - is your team ready?

**Data is being generated at an exponential rate and is more available than ever before**

- 90% of information assets from data science are siloed and unused across business processes<sup>2</sup>
- More data has been created in the past two years than in the entire history of the human race<sup>3</sup>

**Many large companies report being unable to exploit their data for true competitive advantage**

- The elusive promise of game-changing results from data science drives eager organizations to invest money, time, and resources
- Access to an increasing pool of data, that when mined and analyzed, can reveal strategic insights to drive smarter decision-making

## It takes a unique blend of skills to generate analytic insights

Data scientists use a distinct mix of computer science, math and statistics, and domain expertise to analyze the vast amount of today's data, make sense of it, and make it actionable

### Computer Science & Programming



Provides the environment in which data products are created

### Mathematics & Statistics



Provides the theoretical structure in which data science problems are examined

### Domain Expertise



Provides understanding of the reality in which a problem space exists

# The demand for good data scientists far outweighs the supply

## CONVENTIONAL APPROACHES FAIL TO HIT THE MARK

Traditional talent management approaches help organizations strategically manage employees across the talent life cycle, but are all too often, one-size-fits-all across a variety of occupations that make up an organization's workforce



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*Booz Allen knows  
how to find, develop  
and deploy the best  
data scientists*

*Our deep human capital experience*

*coupled with our unique understanding of  
the data science workforce*

*can help clients win the war for  
high-quality data science talent*

According to The National Business Research Institute, not finding the right data science talent can have a significant cost as one bad hire can range from \$25k to \$300k depending on job complexity

A recent survey by Gartner found that over half of business leaders feel their ability to carry out analytics was restricted by the difficulty in finding the right talent

# Booz Allen DS-TMM: Developed by data scientists for data scientists



## **We developed it first**

To date, we are the first known to develop a scientifically validated competency framework for data science

## **We took a rigorous approach**

Our Human Capital experts started from scratch using data-driven and legally defensible approach

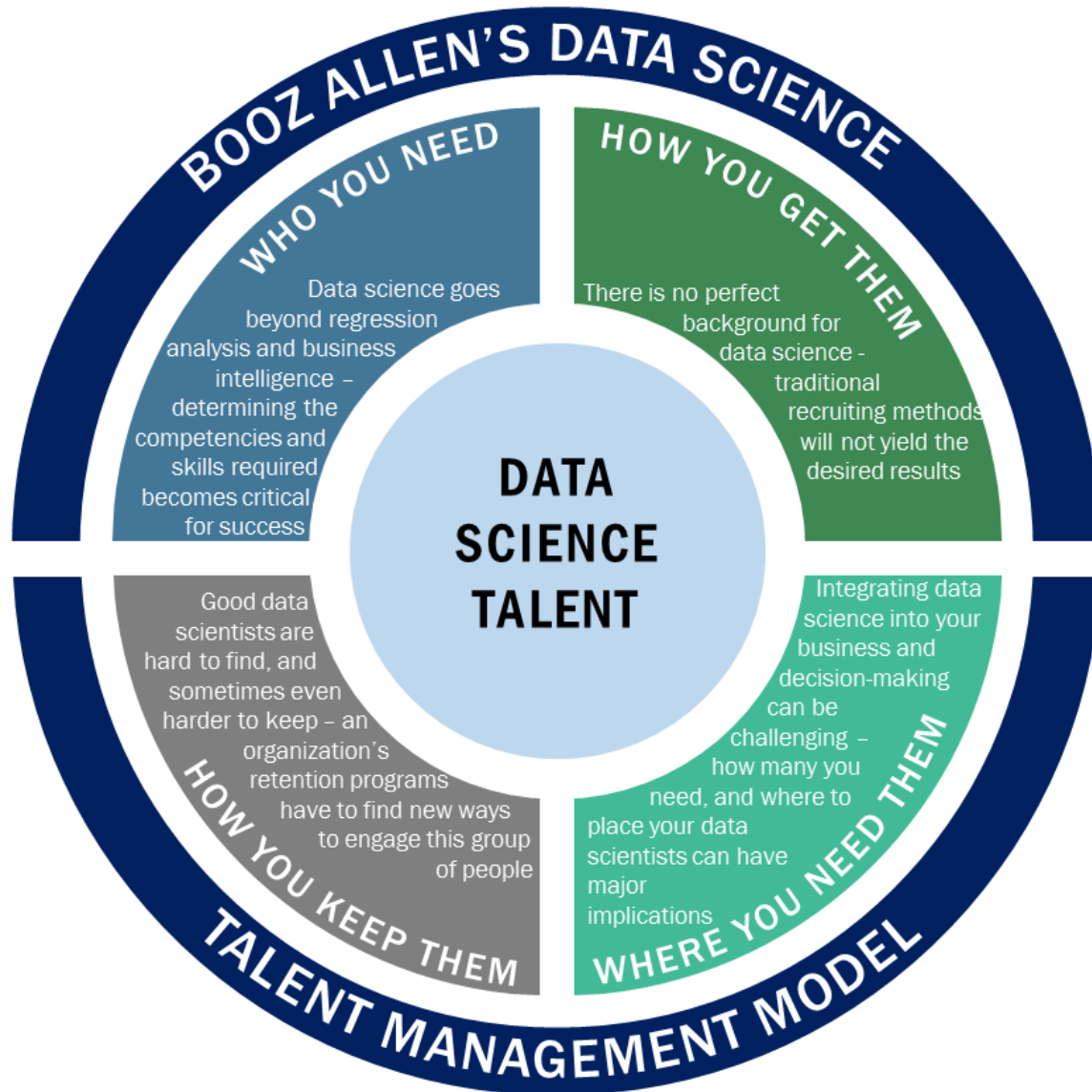
## **We validated it using industry experts**

We partnered with Hogan Assessments who confirmed our results using a convergent validation

## **We have experience**

We've used these principles and tools to help manage our own data science talent as well as our clients'

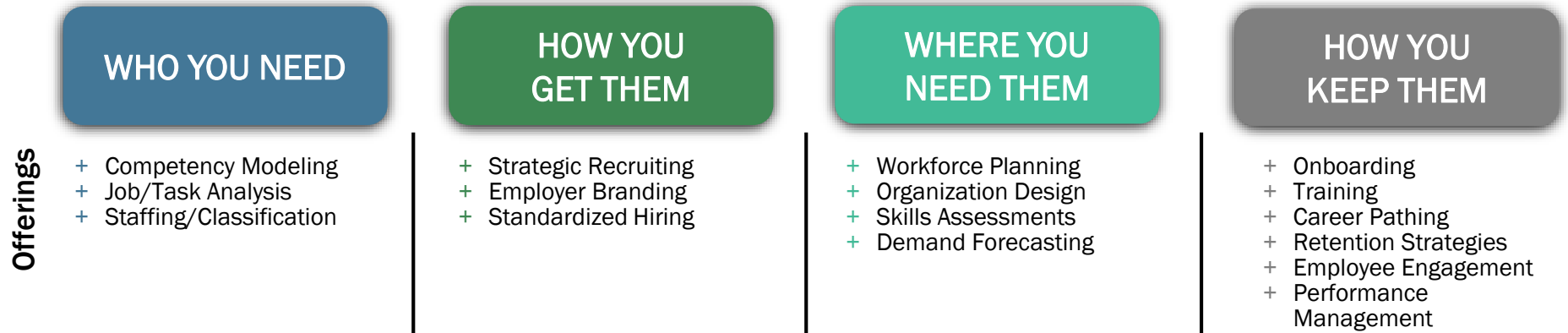
# The DS-TMM defines who data scientists are, how you recruit them, place them, and retain them



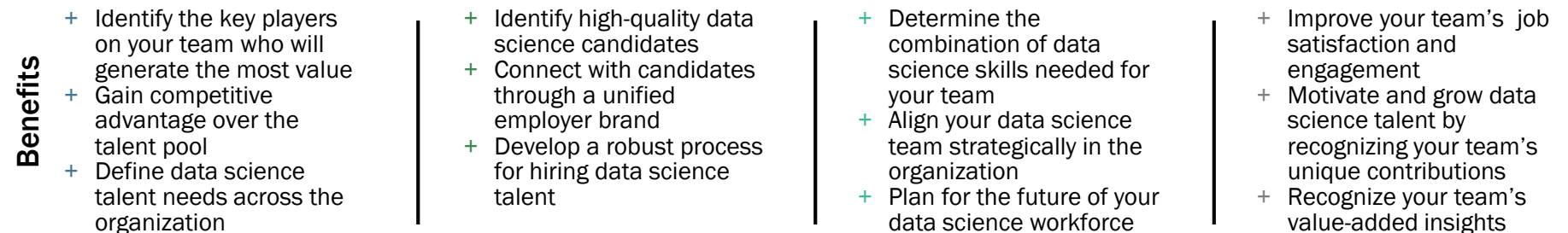
## KEY OUTCOMES

- + Identifies talent that will generate maximum value
- + Rapidly defines talent needs
- + Connects business goals to talent requirements
- + Shapes the workforce of the future
- + Mitigates talent risks before there is a business impact
- + Improves talent's job satisfaction and engagement
- + Motivates and grows talent

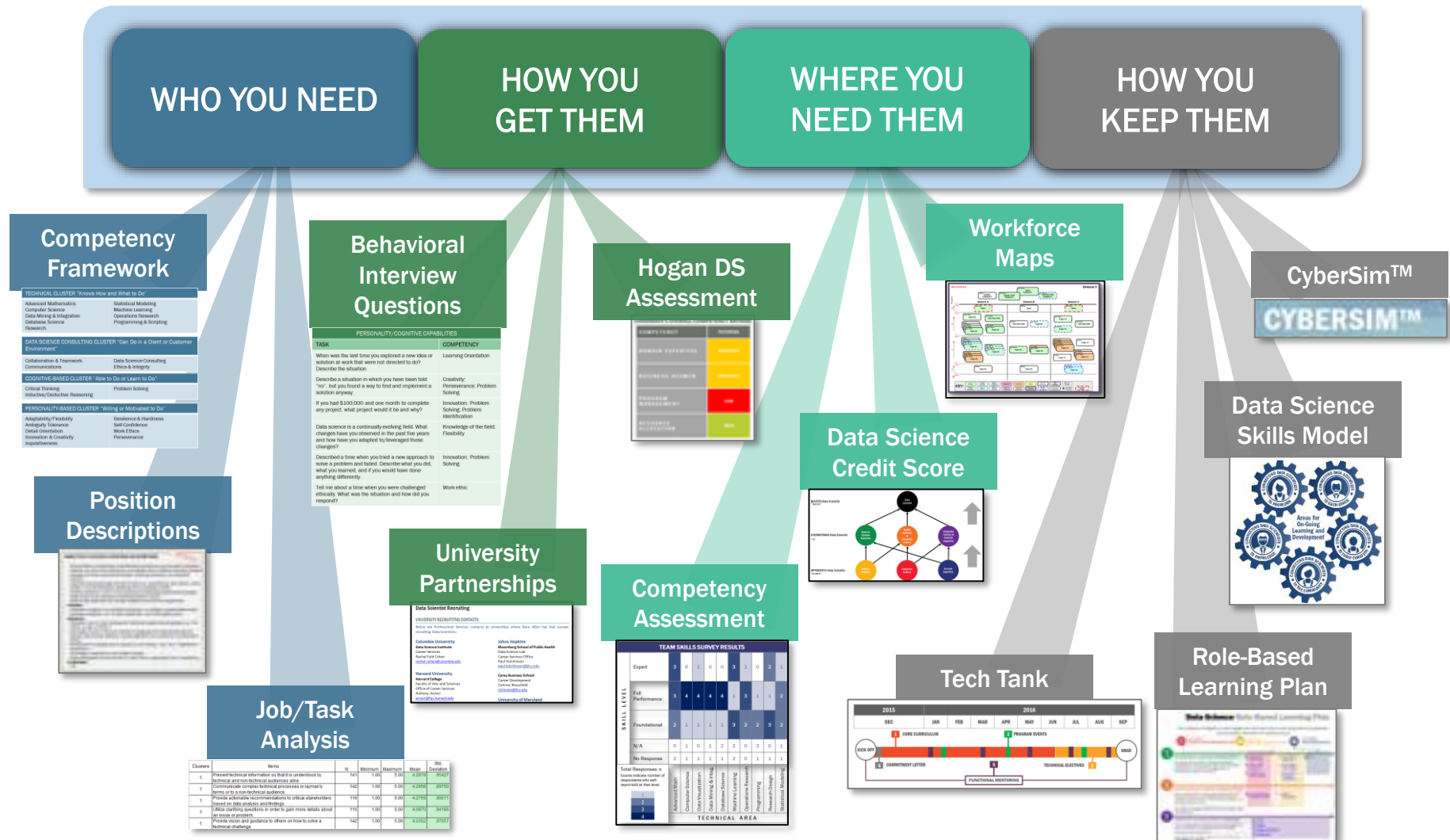
# Our evidence-based model with tailored offerings addresses all talent management needs



## HIGH-QUALITY DATA SCIENCE TEAMS



# The DS-TMM is a “tool belt” of solutions that can be customized based on specific talent needs



# DATA SCIENCE TALENT MANAGEMENT MODEL

## Solutions: Who You Need

WHO YOU NEED

HOW YOU GET THEM

WHERE YOU NEED THEM

HOW YOU KEEP THEM

## DATA SCIENCE COMPETENCY FRAMEWORK

### TECHNICAL CLUSTER “Knows How and What to Do”

Advanced Mathematics  
Computer Science  
Data Mining & Integration  
Database Science  
Research

Statistical Modeling  
Machine Learning  
Operations Research  
Programming & Scripting

### DATA SCIENCE CONSULTING CLUSTER “Can Do in a Client or Customer Environment”

Collaboration & Teamwork  
Communications

Data Science Consulting  
Ethics & Integrity

### COGNITIVE-BASED CLUSTER “Able to Do or Learn to Do”

Critical Thinking  
Inductive/Deductive Reasoning

Problem Solving

### PERSONALITY-BASED CLUSTER “Willing or Motivated to Do”

Adaptability/Flexibility  
Ambiguity Tolerance  
Detail Orientation  
Innovation & Creativity  
Inquisitiveness

Resilience & Hardiness  
Self-Confidence  
Work Ethics  
Perseverance

### CYBERSIM™ (for selection)

Present candidates with a series of increasingly difficult real-world challenge simulations as a technical assessment during recruiting to assess strengths and potential skill gaps

### CHIEF DATA OFFICER (CDO) PLAYBOOK

Provide CDO's or C-suite executives with elements (responsibilities and expectations) for a Chief Data Officer to consider the requirements and implications for success

### HOGAN ASSESSMENT

Assess candidate and employee personality and data science competencies that are indicative of potential for data science roles

### POSITION DESCRIPTIONS

Targeted data scientist roles define the mix of job activities and position qualifications required

*Reach Back Competencies for Teams:*

*Business Acumen; Data Visualization; Domain  
Expertise; Program Management*



# DATA SCIENCE TALENT MANAGEMENT MODEL

## Solutions: How You Get Them

WHO YOU NEED

HOW YOU GET THEM

WHERE YOU NEED THEM

HOW YOU KEEP THEM

## BEHAVIORAL-BASED INTERVIEW QUESTIONS

### PERSONALITY/COGNITIVE CAPABILITIES

TASK	COMPETENCY
When was the last time you explored a new idea or solution at work that were not directed to do? Describe the situation	Learning Orientation
Describe a situation in which you have been told “no”, but you found a way to find and implement a solution anyway.	Creativity; Perseverance; Problem Solving
If you had \$100,000 and one month to complete any project, what project would it be and why?	Innovation; Problem Solving; Problem Identification
Data science is a continually evolving field. What changes have you observed in the past five years and how have you adapted to/leveraged those changes?	Knowledge of the field; Flexibility
Described a time when you tried a new approach to solve a problem and failed. Describe what you did, what you learned, and if you would have done anything differently.	Innovation; Problem Solving
Tell me about a time when you were challenged ethically. What was the situation and how did you respond?	Work ethic

### UNIVERSITY PARTNERSHIPS

A comprehensive rolodex of university relationships based on previous successful sourcing of data scientists at these schools

### HOGAN ASSESSMENT

Identify indicators of potential competencies related to data science personality and consulting to foster high-potential data scientists

### SUMMER GAMES

10-week long summer internship program where students work in small teams to solve real-world, social good challenges selected through crowdsourcing

### WINTER EXTERNSHIP

Week long student program to promote rapid innovation learning through a technology petting fair

# DATA SCIENCE TALENT MANAGEMENT MODEL

## Solutions: Where You Need Them

WHO YOU NEED

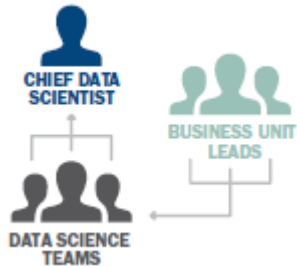
HOW YOU GET THEM

WHERE YOU NEED THEM

HOW YOU KEEP THEM

## ALIGNING DATA SCIENCE

### DATA SCIENCE ORGANIZATIONAL STRUCTURES



#### CENTRALIZED MODEL

Business units bring their problems to a centralized data science team, overseen by a chief data scientist

**DIFFUSED MODEL**  
Data science teams are fully embedded in business units and report to individual business leaders



#### DEPLOYED MODEL

Data science teams are overseen by a chief data scientist and forward deploy to business units

### COMPETENCY ASSESSMENT (for the organization)

Survey to measure and assess the data science capability of a team to inform talent planning and optimize alignment of data scientists to work

### DATA SCIENCE CREDIT SCORE

Algorithm to measure a person's data science experience – the score then places an individual in a comprehensive career development program to achieve “Master Data Scientist” status

### DEMAND MODELING

Approach which uses best-practice analytics project selection criteria to evaluate a pipeline of analytics projects which then identifies the workforce demand to complete critical analytics projects

### WORKFORCE MAPS

Tool to create visualizations for workforce analysis and provide insight into the risks and implications of the staffing structure, data scientist distribution, competencies, and general footprint

# DATA SCIENCE TALENT MANAGEMENT MODEL

## Solutions: How You Keep Them

WHO YOU NEED

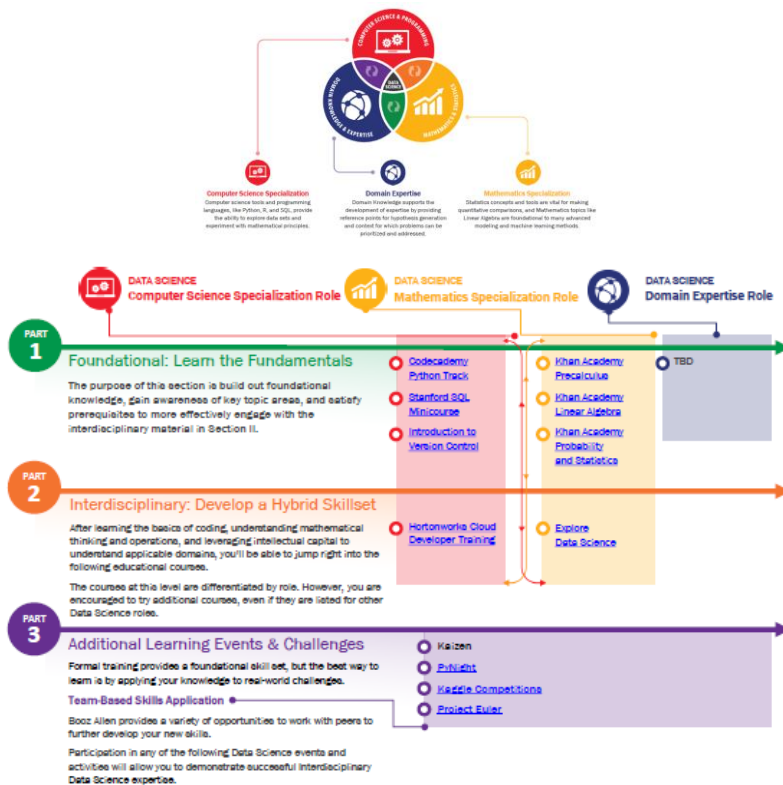
HOW YOU GET THEM

WHERE YOU NEED THEM

HOW YOU KEEP THEM

## DATA SCIENCE CAREER PATH & DEVELOPMENT ROADMAP

### DATA SCIENCE ROLE-BASED LEARNING PLAN



### LEADING WITH ANALYTICS

Three module leadership development program to train executives to be more comfortable with analytics, and better make decisions with data

### CYBERSIM™ (for development)

A customizable, valid, realistic, and innovative game-based simulation that helps to train data scientists by presenting employees with increasingly difficult scenarios to test and improve users' proficiency

### TECH TANK

A web-based platform to host data science competitions and organize challenging and exciting functional activities to engage and develop data scientists

### DATA SCIENCE SKILLS MODEL

The comprehensive set of tools and activities that can be used to grow data scientists to support retention, and include ideas such as Hack-a-thons, Speaker Series, and Brown Bags

# Data Science Talent Management Points of Contact



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## ABOUT BOOZ ALLEN

Booz Allen brings its pioneering work in data science—and the industry-leading expertise of its more than 500-member data science team—to transform our clients' data into actions that keep them competitive in today's data-driven economy. The first ever National Data Science Bowl, along with Booz Allen's recently launched Field Guide to Data Science are part of the firm's ongoing commitment to supporting data science education and awareness.