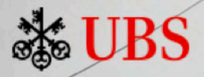
element22

2018 ANALYTICS POWER™

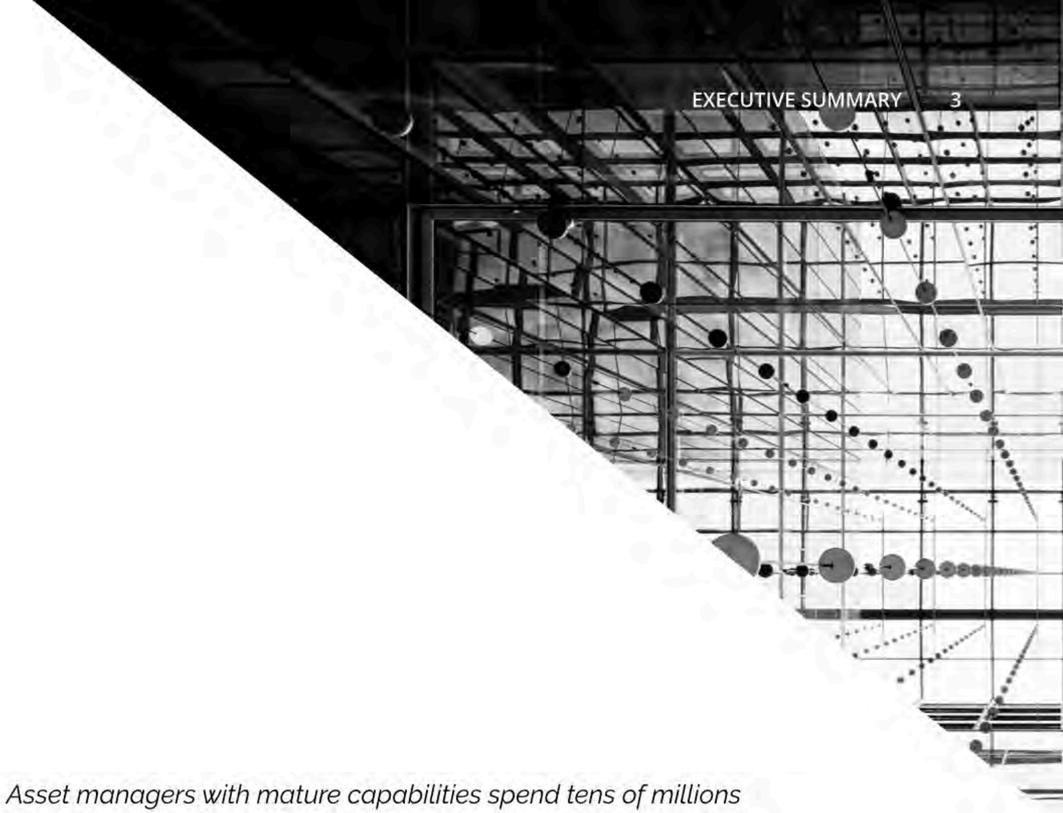
THE STATE OF ADVANCED ANALYTICS AND ALTERNATIVE DATA
IN THE ASSET MANAGEMENT INDUSTRY

SPONSORED BY



ELEMENT22 IS COMMITTED TO **MODERNIZING DATA AND ANALYTICS** AT FINANCIAL INSTITUTIONS AND THE BROADER INDUSTRY BY **COMBINING STRATEGY, EXECUTION AND ANALYTICS EXPERTISE**

NEW YORK | LONDON | SAN JOSE



INDUSTRY BENCHMARK

01 *The journey to realize sustainable material value from advanced analytics and alternative data takes 4 years on average*

02 *Asset managers with mature capabilities spend tens of millions of USD on advanced analytics and alternative data annually*

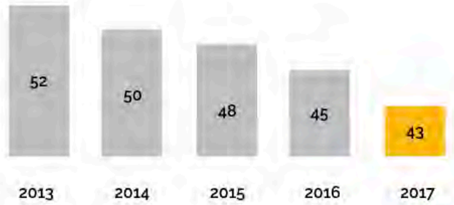
03 *Aggressive adopters employ hundreds of data scientists to support their efforts*

04 *Asset managers that have reached the inflection point plan to grow their spend on alternative data by 240%*

05 *Data being stored and analyzed at several asset managers is in the petabytes and with some over 100 of petabytes*

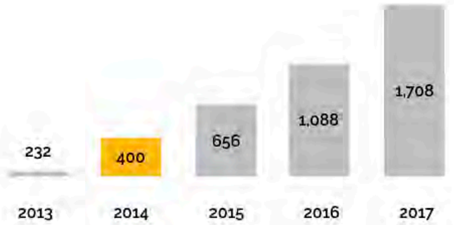
Global AUM ($US trillions)[1,2]

AUM surged to record levels with passive strategies growing most rapidly



Managers' Fees (BPS)[3]

Downward pressure on management fees persists



Alternative Data Spend[4]

Alternative data (and advanced analytics) is used to generate alpha

SOURCES:

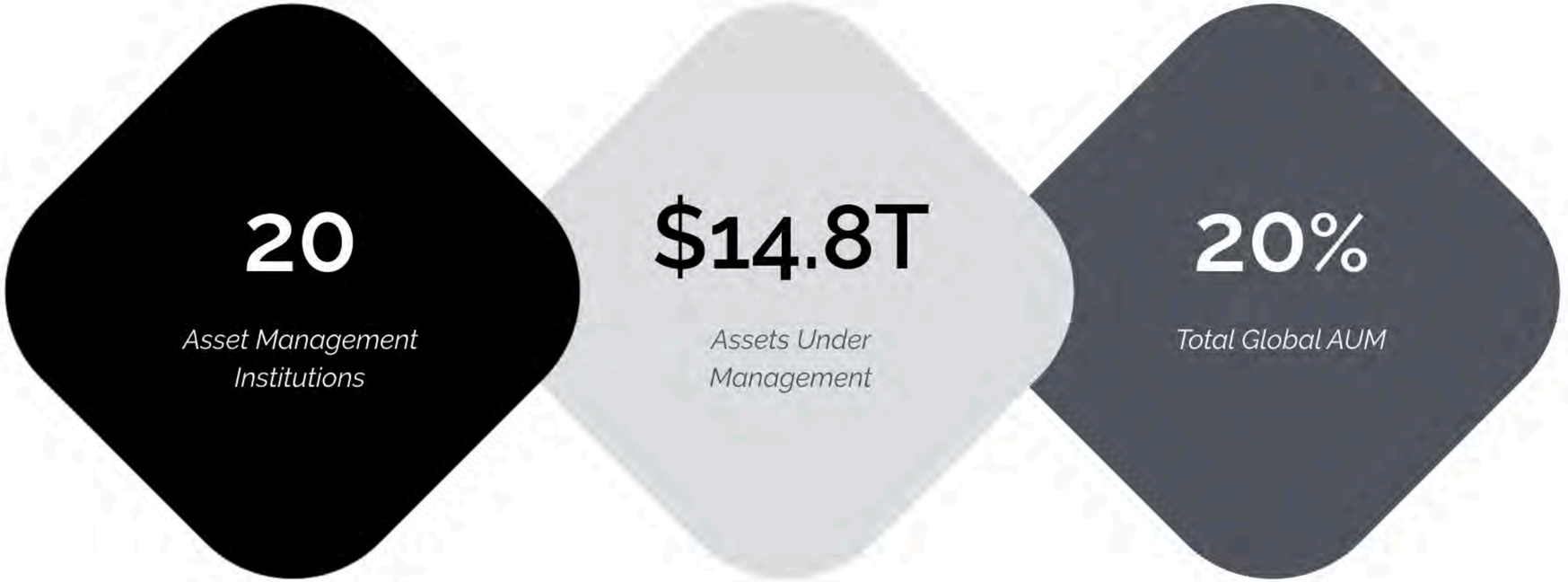
1. BCG Global Asset Management 2014: Steering the Course for Growth; | 2. BCG Global Asset Management 2018: The Digital Metamorphosis; | 3. Casey Quirk / McLagan Investing for Growth: Performance Intelligence 2018; | 4. AlternativeData.org

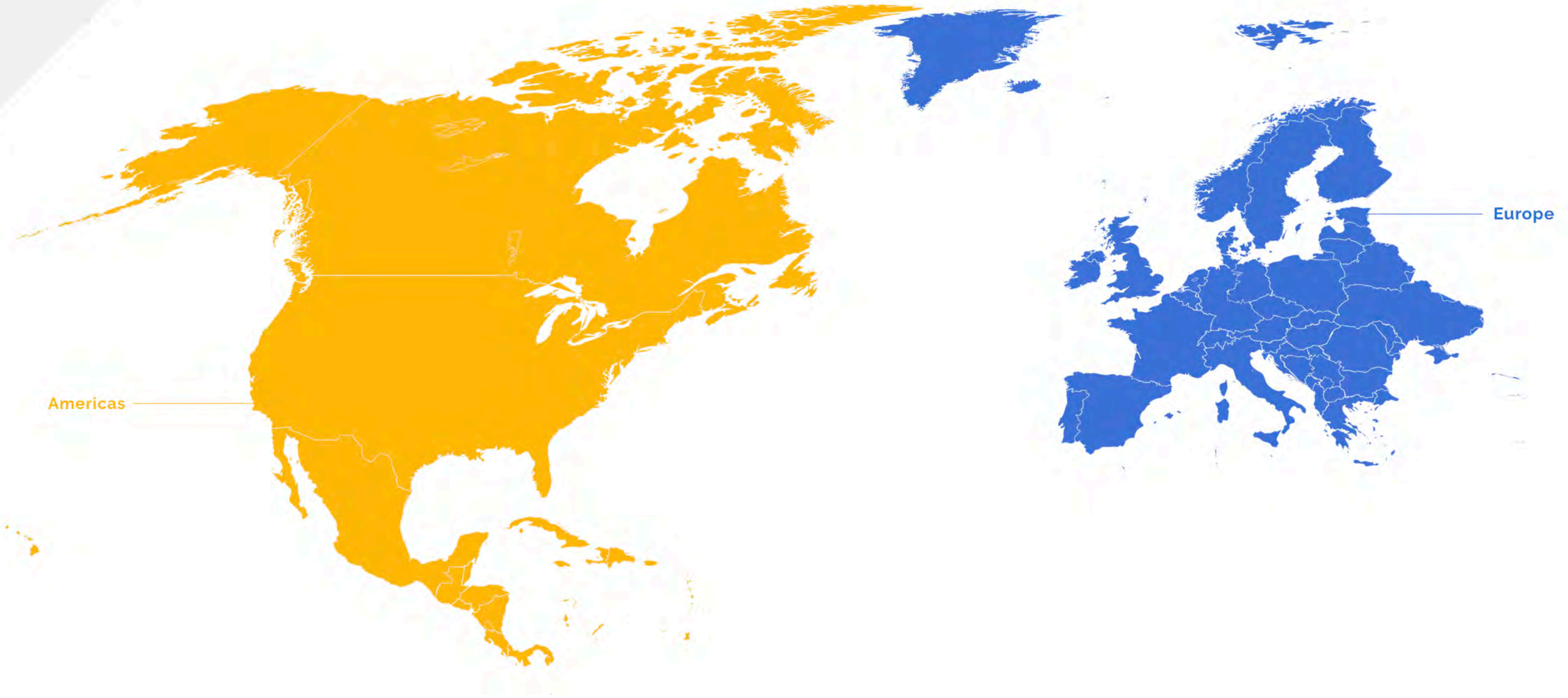
ELEMENT22 INITIATED THIS UNIQUE STUDY TO

UNDERSTAND USE OF **ADVANCED ANALYTICS** AND **ALTERNATIVE DATA** BY ASSET MANAGERS

ELEMENT22 INITIATED THIS UNIQUE STUDY TO

CREATE BROAD AND FORMAL **BENCHMARK** IN THE USE OF **ADVANCED ANALYTICS** AND **ALTERNATIVE DATA**


20
Asset Management Institutions
$14.8T
Assets Under Management
20%
Total Global AUM


Americas
Europe


10
Managers Affiliated with Financial Institutions
3
Independent Managers
3
Hedge Funds
4
Pension Plans


10
ACTIVE
7
MIXED
3
PASSIVE

01

FOUNDATIONAL CAPABILITIES

- Data and Analytics Strategy
- Governance
- Analytics Infrastructure

02

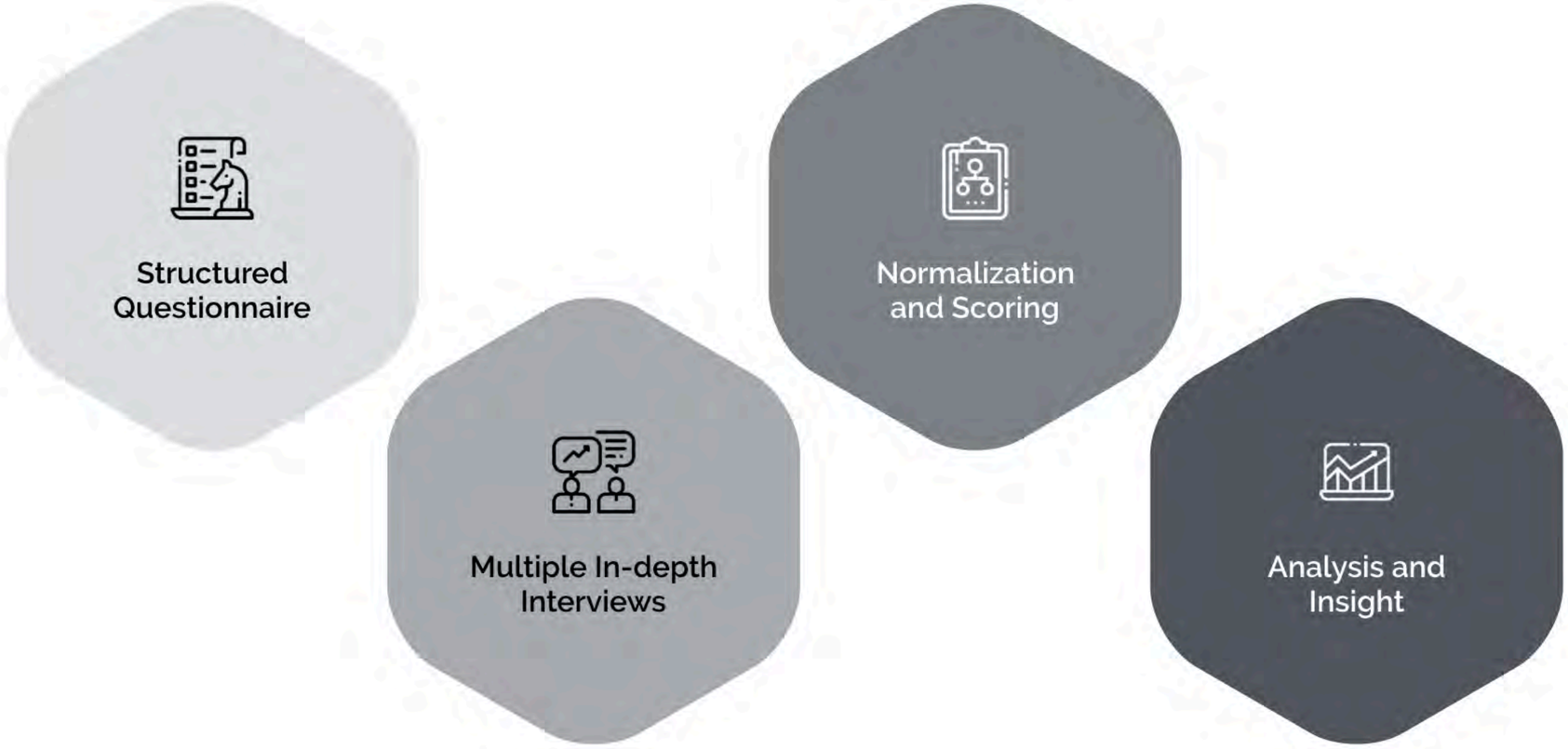
ADVANCED ANALYTICS AND ALTERNATIVE DATA CAPABILITIES

- **Alpha Generation** – research, trading, investment strategy, portfolio construction, and innovative investment approaches
- **Business Operations** – Smart RPA, Machine Learning (ML) and Natural Language Processing (NLP) as well as different types of analytics
- **Client Acquisition and Retention** – client 360 view, application of Smart RPA, ML, and NLP as well as different types of analytics

03

METRICS

- Program Metrics
- Investment Metrics


Structured Questionnaire
Multiple In-depth Interviews
Normalization and Scoring
Analysis and Insight

SMART ROBOTIC PROCESS AUTOMATION
(e.g. labor automation)

NATURAL LANGUAGE PROCESSING
(e.g. voice recognition)

MACHINE LEARNING
(e.g. content classification)

TRANSACTION DATA
(e.g. analyzing e-commerce receipts)

VIDEO CAPTURE
(e.g. counting cars in parking lots)

SATELLITE IMAGERY
(e.g. tracking shipping containers)

GEO- LOCATION
(e.g. monitoring foot traffic)

APP ANALYSIS
(e.g. analyzing food delivery apps)

SENTIMENT ANALYSIS
(e.g. inspecting Twitter streams)

WEATHER ANALYSIS
(e.g. forecasting crop yields)

REFERENCE https://www.dataminr.com/finance

CASE STUDY: QATAR DIPLOMATIC CRISIS

Dataminr Alerted 48 Hours Before Official Statements

As several countries in the Gulf Cooperation Council prepared to cut diplomatic ties with Qatar, Dataminr for Finance alerted clients to their plans 48 hours before the official statements were released. The news caused the Qatar Stock Exchange to drop 7% by the end of the next day raising concerns across global natural gas markets.

Source: Dataminr

REFERENCE https://blog.quandl.com/email-receipts-predicted-gopros-q3-earnings

How Email Receipts Predicted GoPro's Q3 Earnings

BY:ABRAHAM THOMAS ALTERNATIVE DATA NOV 07 2016 Tags: Email receipts, GoPro

The street got a big surprise last week when GoPro reported earnings. Shares dropped sharply in Friday morning trading after the company reported a loss of 60 cents per share on $240.56 million in revenue. Analyst expectations were much milder at a loss of 36 cents per share on $314.06 million in revenue. GoPro cited production issues as the cause for both the third quarter miss and the guidance for Q4.

Prior to the earnings announcement, most pundits were bullish – or at least neutral – on GoPro: see MarketWatch coverage, AmigoBulls, and this note from Raymond James.

This is unusual. Modern markets are astonishingly efficient, and large surprises are very rare. Analysts have hundreds of data points, comprehensive business models, and frequent "guidance" from the companies they cover. As a result, their forecasts are remarkably accurate.

This leads to the question: what could investors have done to foresee this kind of miss?

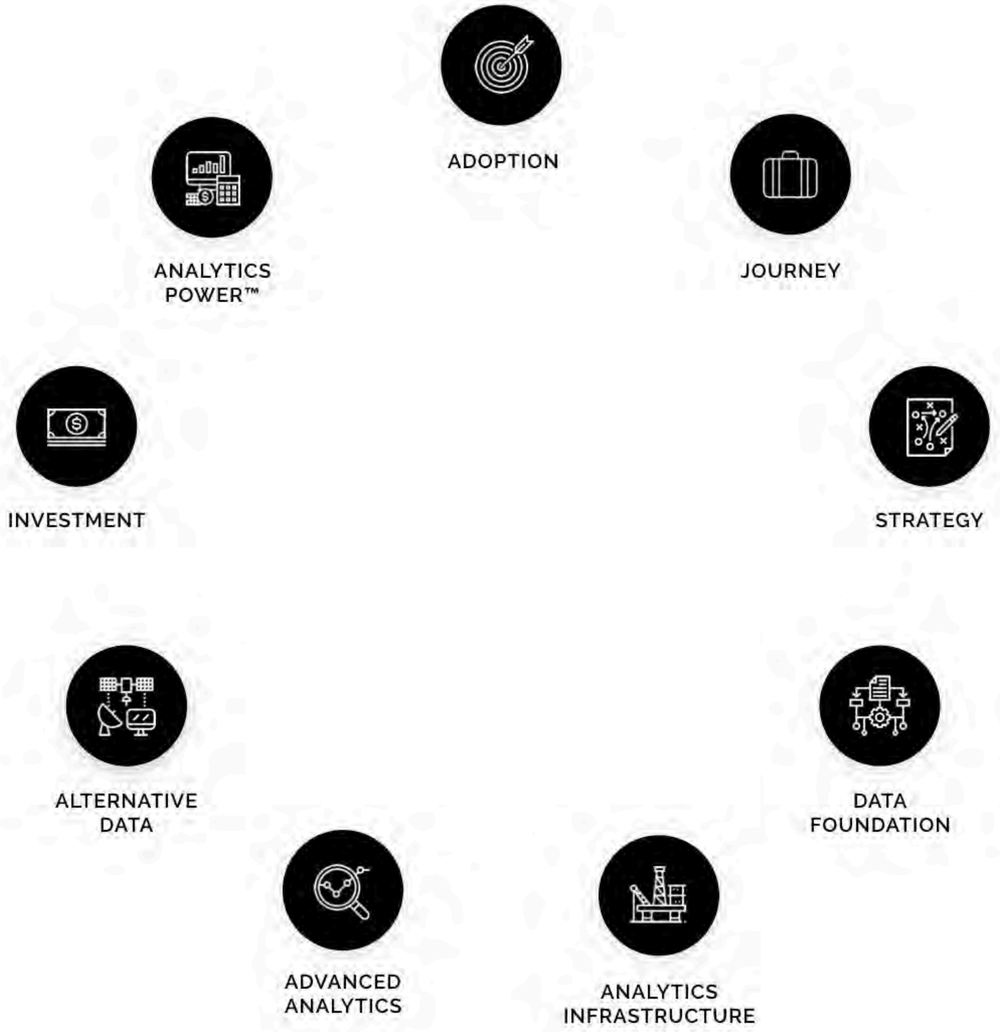
The answer lies in electronic receipts extracted from over 3 million inboxes. As it turns out, Quandl's Email Receipt database told a different story from the consensus.

The analyst consensus was that GoPro would report a +42% Q/Q change in revenue. In our own analysis using the Quandl Email Receipts data we started out by looking at receipts mailed out by GoPro, representing sales made directly on the GoPro website. This set of receipts showed Q/Q growth of 25%; not quite as good as the consensus, but not terribly bad either.

Source: Quandl

02.

FINDINGS


ADOPTION
JOURNEY
STRATEGY
DATA FOUNDATION
ANALYTICS INFRASTRUCTURE
ADVANCED ANALYTICS
ALTERNATIVE DATA
INVESTMENT
ANALYTICS POWER™

ADOPTION OF ADVANCED ANALYTICS AND ALTERNATIVE DATA VARIES GREATLY ACROSS ASSET MANAGERS

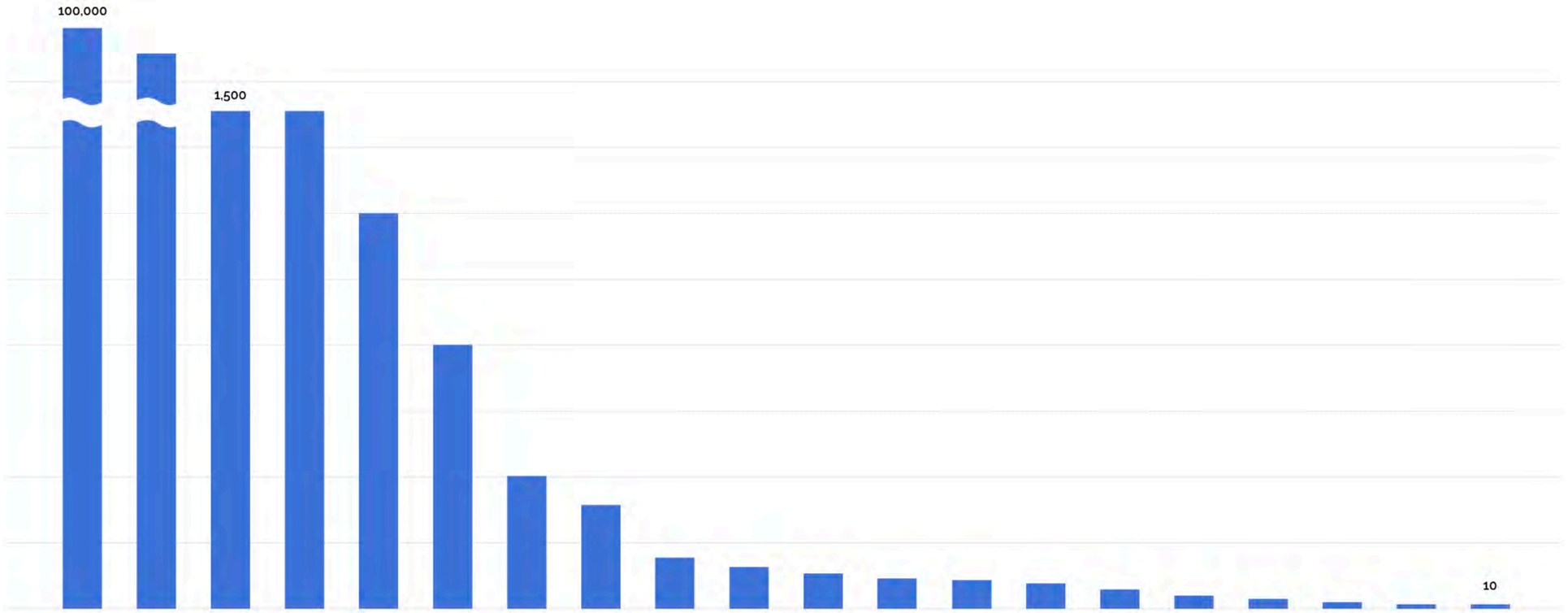
High adoption levels of advanced analytics

More than half of asset managers use alternative data

Most firms are in trials and POCs

STORAGE SIZE IS CORRELATED TO LEVEL OF ADVANCEMENT AND COMMITMENT

(IN TB)



ASSET MANAGERS ARE ON A JOURNEY TO DEVELOP ADVANCED ANALYTICS AND ALTERNATIVE DATA CAPABILITIES

65% of managers are in the early part of the journey
Journey takes on average 4 years so it takes time, patience and investment to generate material value

01

Starting to formalize foundational data programs, but not advanced analytics or alternative data

02

In process of developing foundation, small and ad-hoc trials of analytics and alternative data mostly in cloud and labs

03

Foundation built or close to complete, more analytics and alternative data trials with some showing success

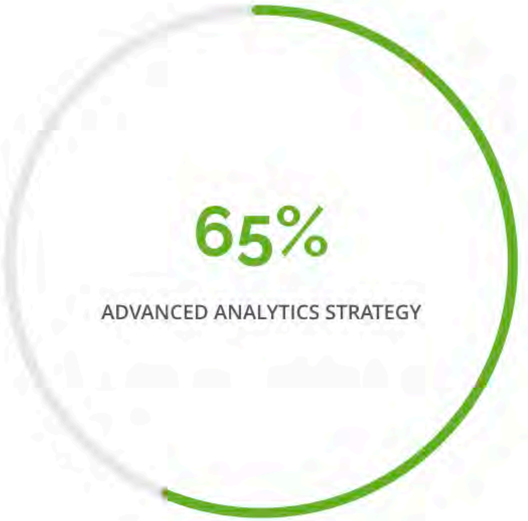
04

Significant success with analytics and alternative data results in major investment; foundation in place

* *Boxes on the top part of the chart represent the number of participants at that stage of the journey. Percent represents amount of participants that are at that stage of the Journey.*

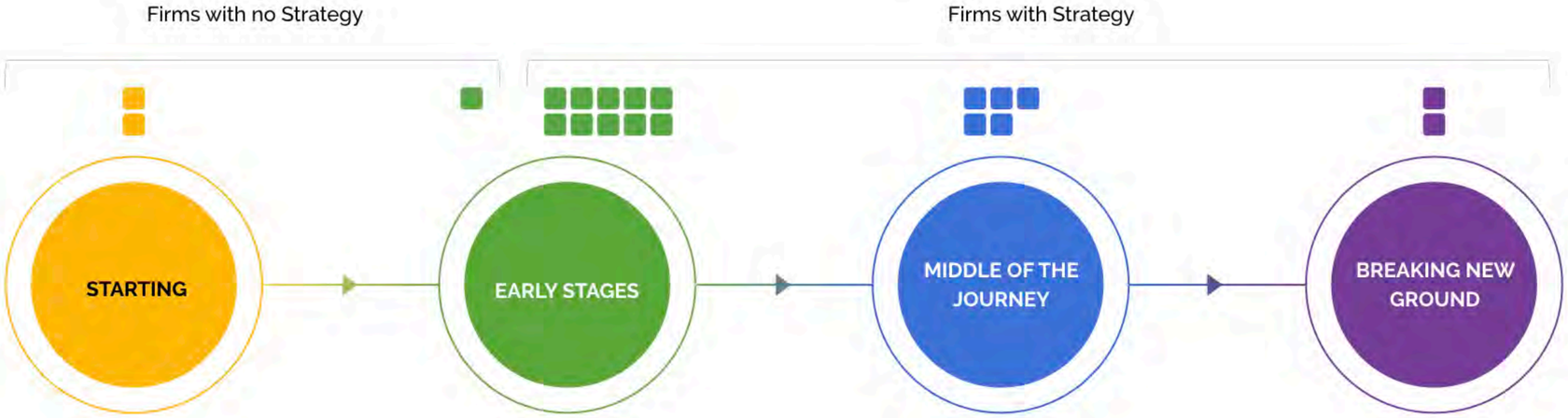
ASSET MANAGERS ARE BUILDING DATA AND ANALYTICS FOUNDATIONS BY STARTING WITH FORMAL STRATEGIES

Data strategies and analytics strategies have the same positive impact on the journey



ASSET MANAGERS ARE BUILDING DATA AND ANALYTICS FOUNDATIONS BY STARTING WITH FORMAL STRATEGIES

All firms in the later stages of the journey have a defined data and analytics strategy in place

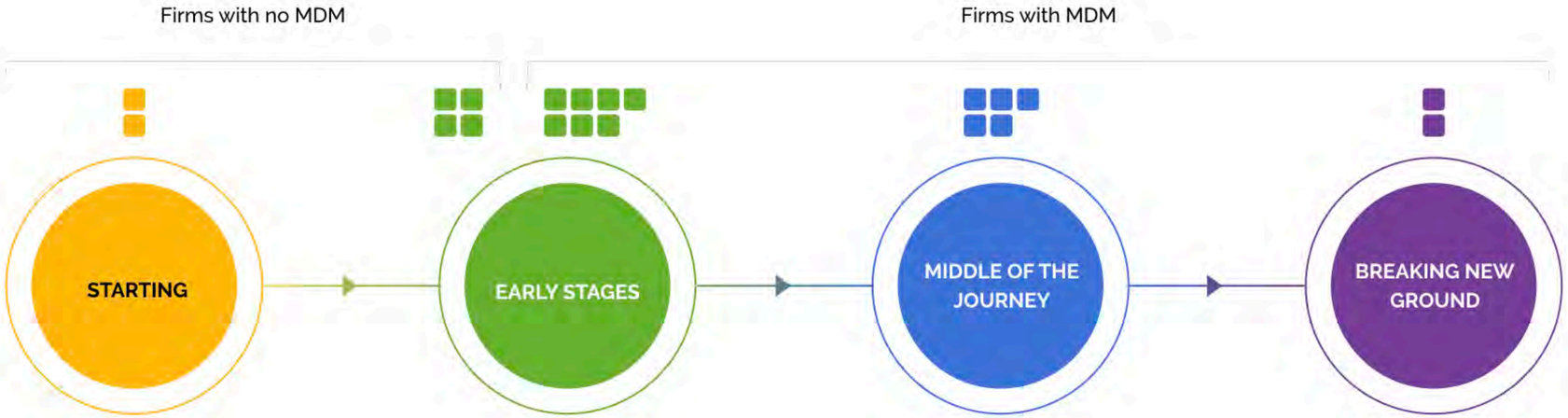


TYPICAL COMPONENTS OF A STRATEGY

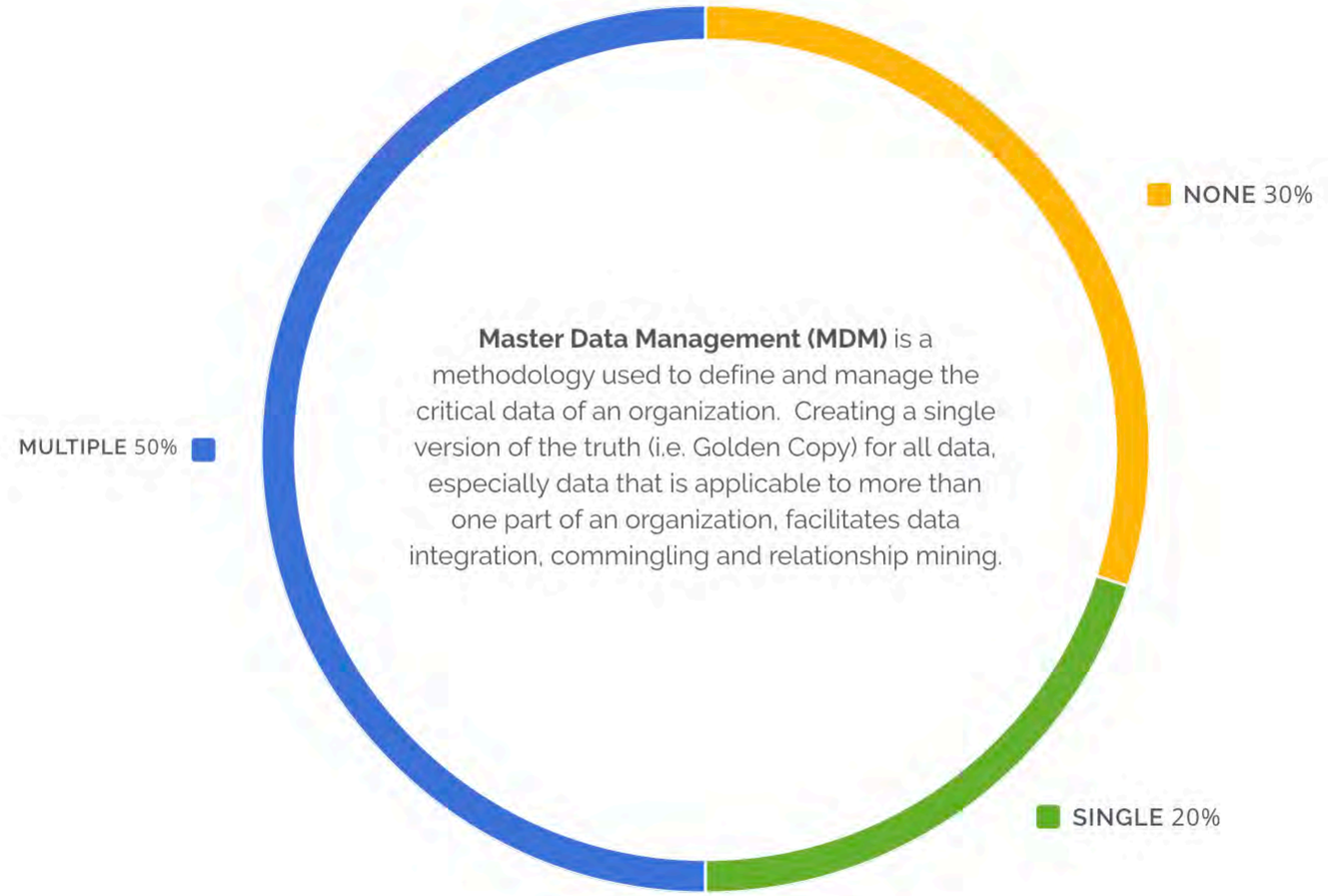
- Business case and funding model
- Data and analytics organization
- Governance and policies
- Data and technology architecture
- Data quality assurance
- Control environments
- Security and privacy standards
- Roadmap

THE JOURNEY TOWARD VALUE CREATION BEGINS WITH BUILDING DATA MANAGEMENT CAPABILITIES FOCUSED ON MASTERING DATA AND MAKING IT AVAILABLE

70% of participants master data and 50% have multiple data masters for different data categories
All firms in the later stages of the Journey have data masters in place
Securities data is the most frequently mastered domain, followed by Pricing data



NUMBER OF GOLDEN COPIES



THE JOURNEY CONTINUES WITH CURATING, GOVERNING, SHARING AND MAKING DATA FIT FOR PURPOSE

Governance is implemented and matures in the early stages

All managers govern sourcing of data, are aligned with regulatory drivers, and to some extent have implemented entitlements and security

Data lineage is the most difficult and only 35% of managers have documented it

	Starting	Early Stages	Middle of the Journey	Breaking New Ground	Percent of Firms
Data Lineage					35%
Documented Data Policies and Standards					65%
Content Governance					55%
Defined Roles and Responsibilities					80%
Privacy					90%
Data Sourcing					100%
Alignment with Regulatory Drivers					100%
Entitlements and Security					100%

THE JOURNEY INCLUDES BUILDING AN ADVANCED ANALYTICS INFRASTRUCTURE, MOSTLY IN THE CLOUD THROUGH INNOVATION LABS AND WITH POCS

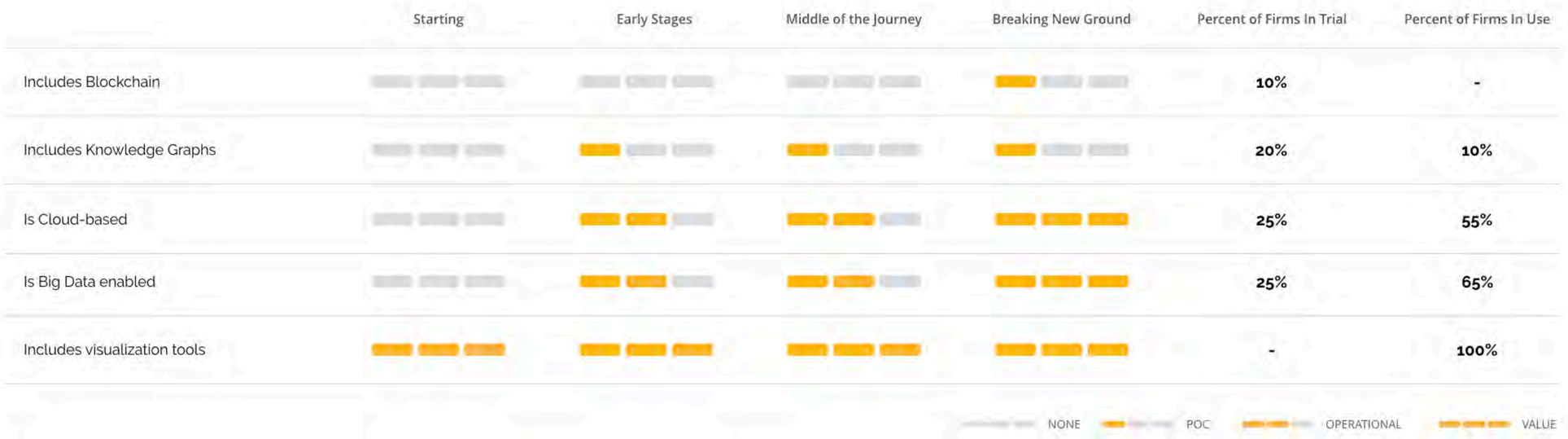
90% of managers use big data technologies to some extent

80% of managers are using cloud to some extent

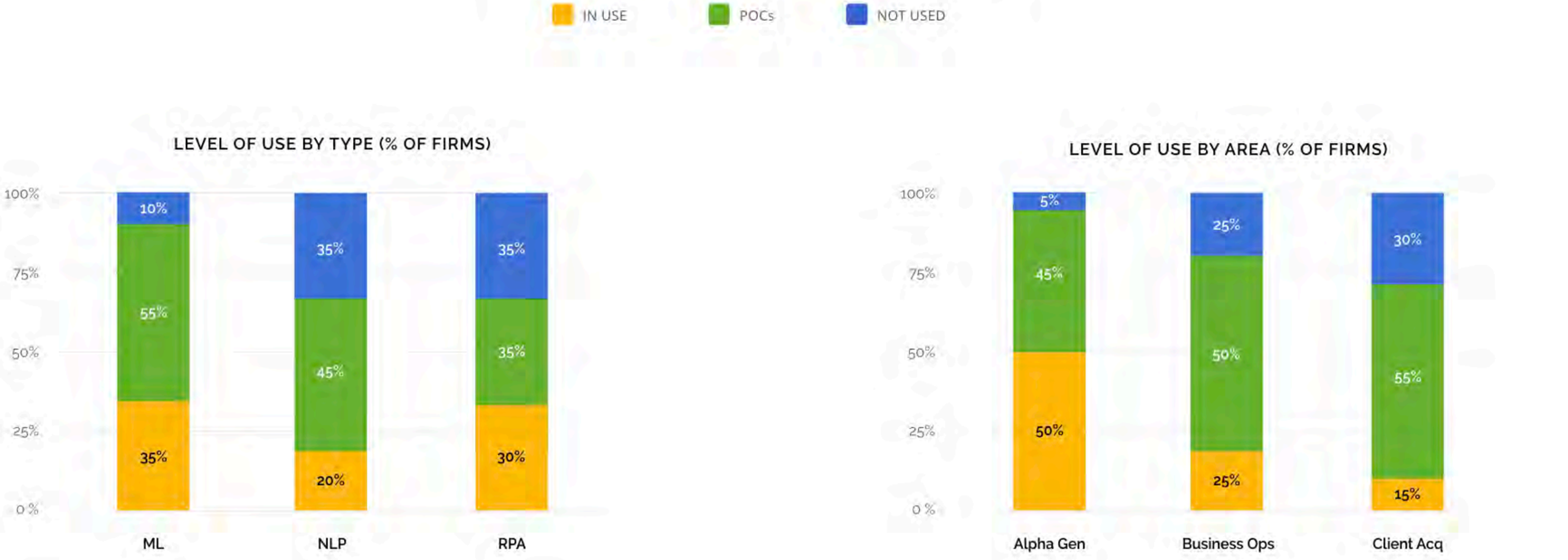
Semantics and Knowledge Graphs are used mainly in POCs by 30% of managers

10% of managers are using blockchain in POCs

Visualization tools are widely used throughout the journey –
tools such as Tableau and Qlik are extensively also used in traditional environments for presenting BI results



Advanced analytics primarily target business operations and alpha generation, with ML identified as the most mature solution type



90% of managers are trying or using ML with 55% in POCs or trials

NLP follows ML with 65% of managers trying it or using it

Advanced analytics programs are largely in a state of operationalization and are advancing toward achieving tangible value

65% of asset managers are trying or using Smart RPA in Business Operations

Alpha generation makes most use of advanced analytics

Advanced analytics programs are largely in a state of operationalization and are advancing toward achieving tangible value
Use of ML for alpha generation creates the most value for managers regardless of the type and size of the firm

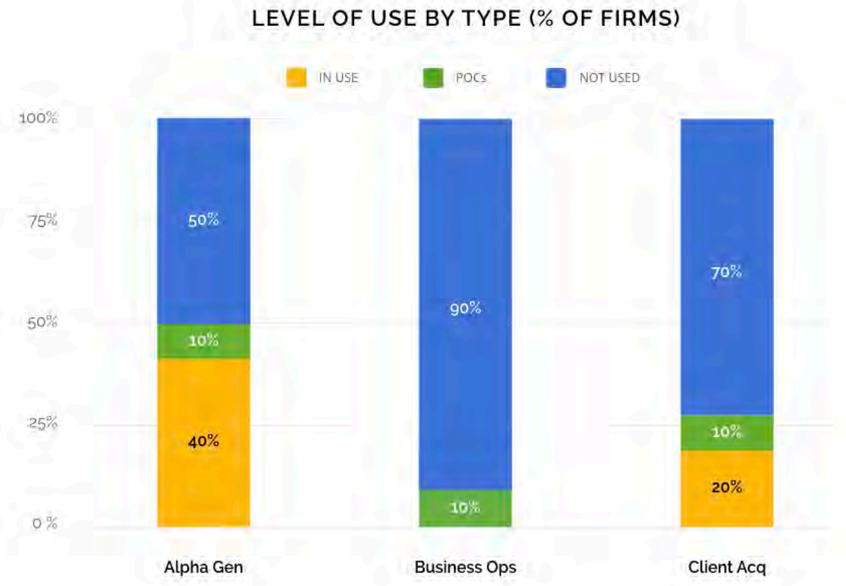
Machine Learning is the most advanced analytics capability

Machine Learning is used from the early stages of the journey and leads other types of advanced analytics technologies
Use of Natural Language Processing follows the use of Machine Learning and is applied in all areas of business

ALPHA GENERATION MAKES MOST USE OF ALTERNATIVE DATA

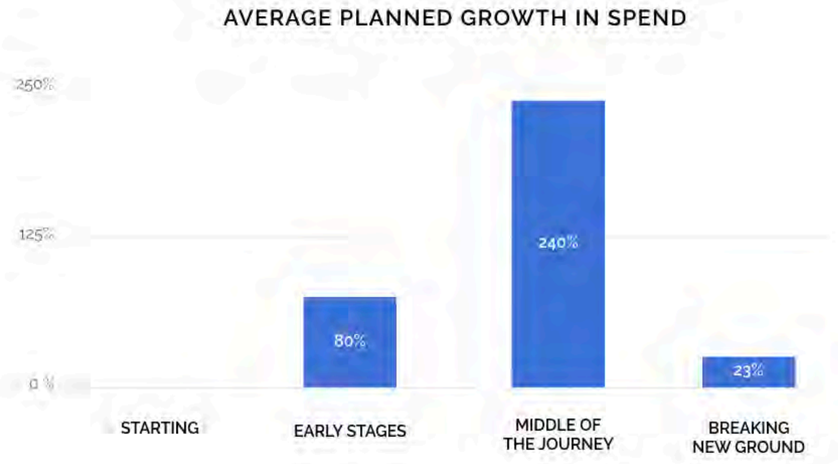
Half of the managers are using alternative data to some extent in alpha generation with sentiment analysis dominating

30% of the managers are using alternative data to some extent in Client Acquisition and Retention with prospecting being the most mentioned function



ALTHOUGH PRODUCTION USE OF ALTERNATIVE DATA IS LOW THERE ARE MATERIAL GROWTH PLANS

Planned growth for spending on alternative data explodes when the business recognizes tangible value and after many explorations in different areas



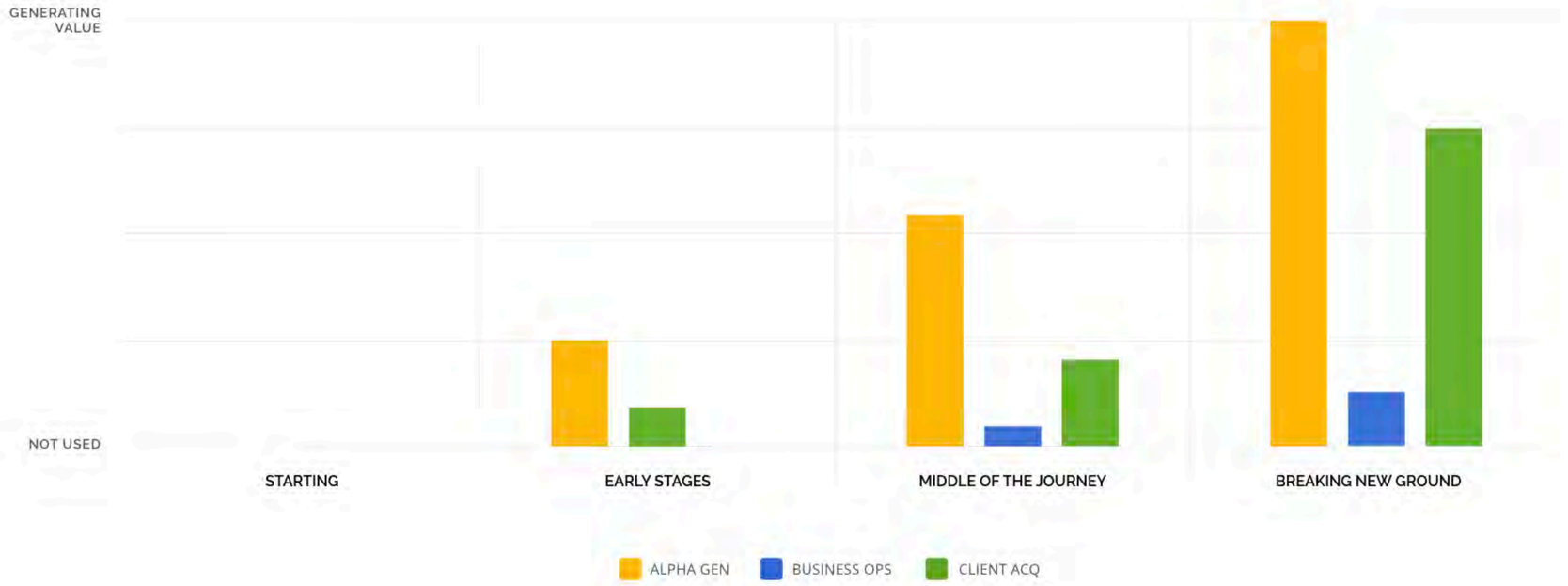
Alpha generation and client acquisition and retention use alternative data

Alternative data use is most mature for alpha generation
Business Operations has not been a target for alternative data

USE OF ALTERNATIVE DATA BY AREA

Alpha generation is the primary focus of alternative data usage and it takes 3-4 years to achieve tangible benefits

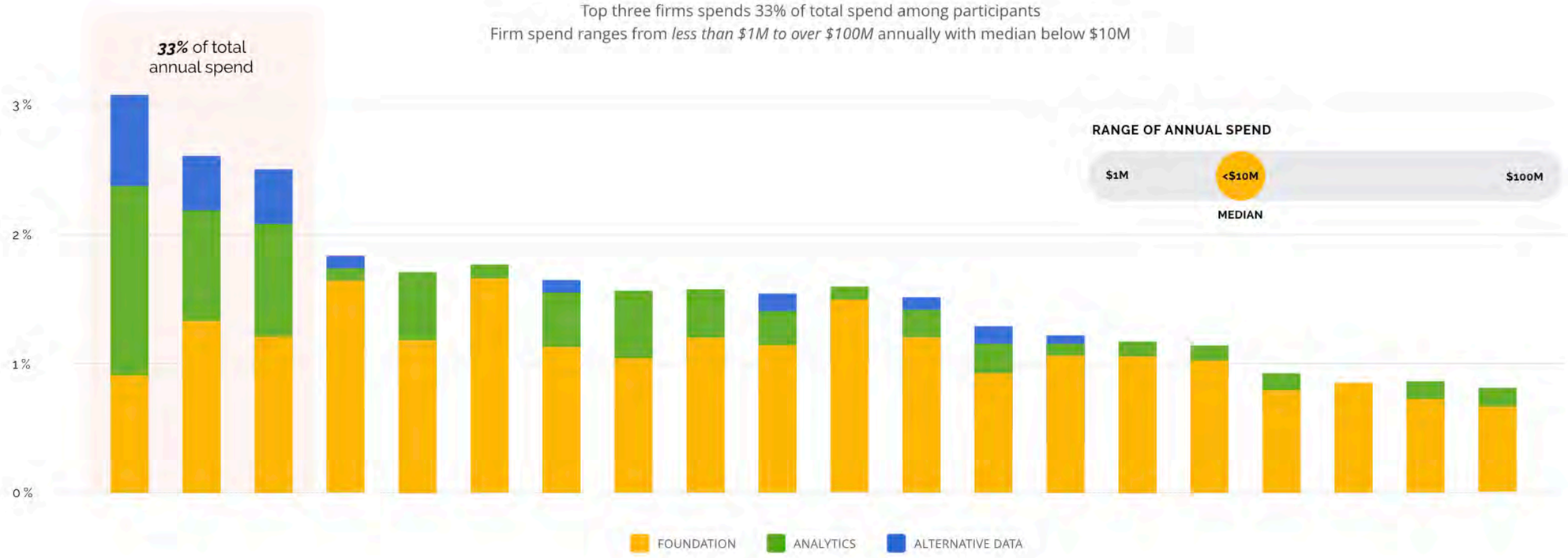
Value generated by the use of alternative data rises through the journey with accelerated growth



TOTAL ANNUAL SPEND

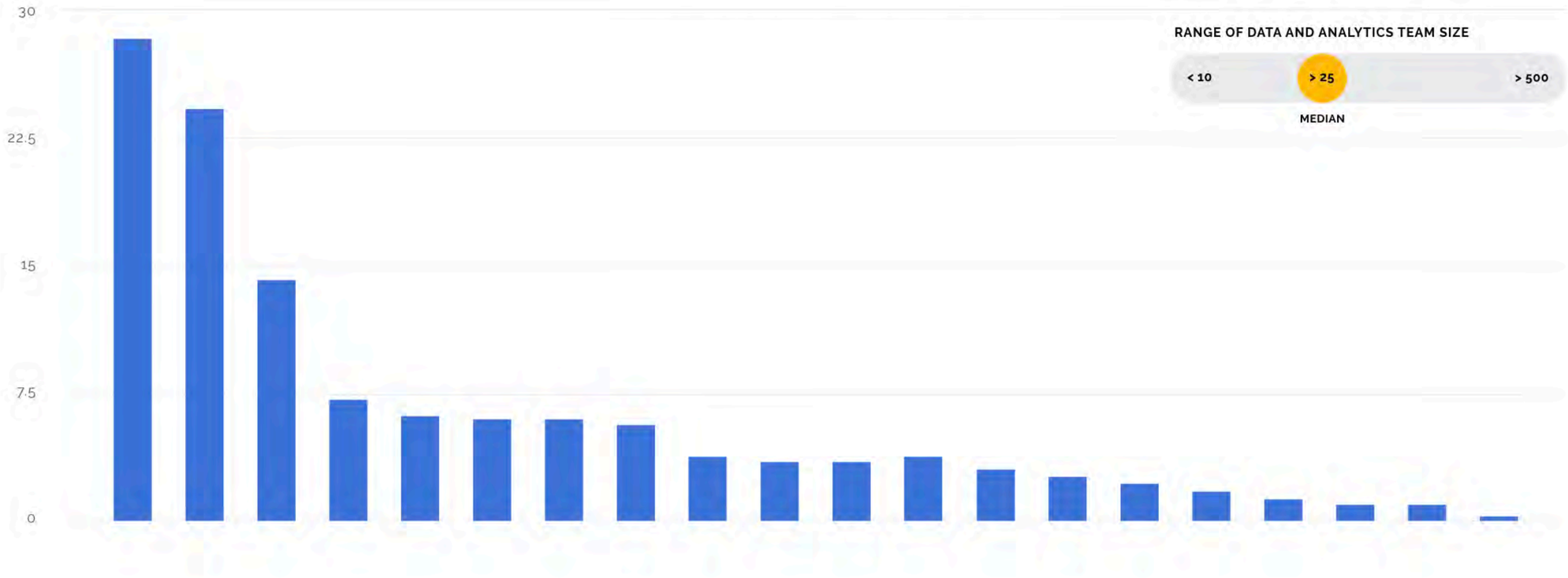
(% OF ANNUAL REV)

Top three firms spends 33% of total spend among participants
Firm spend ranges from *less than $1M to over $100M* annually with median below $10M



SIZE OF DATA AND ANALYTICS TEAM

(NUMBER OF DATA SCIENTISTS PER $100M OF REVENUE)



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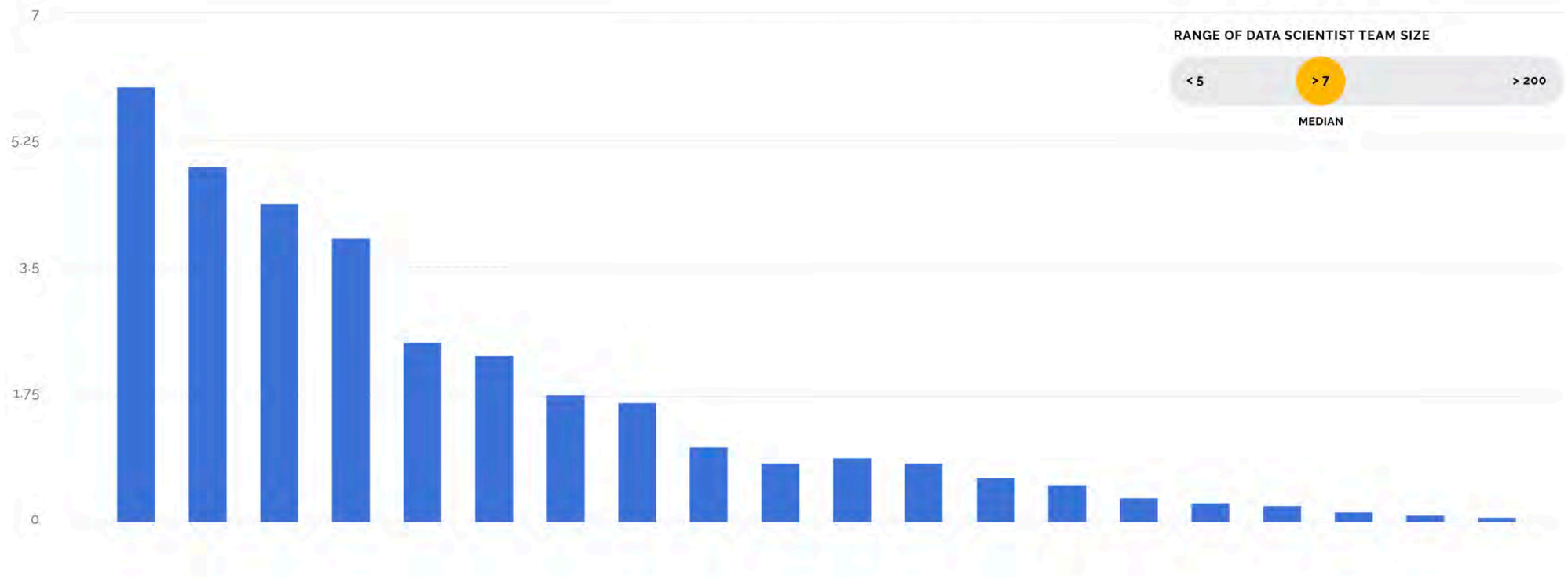
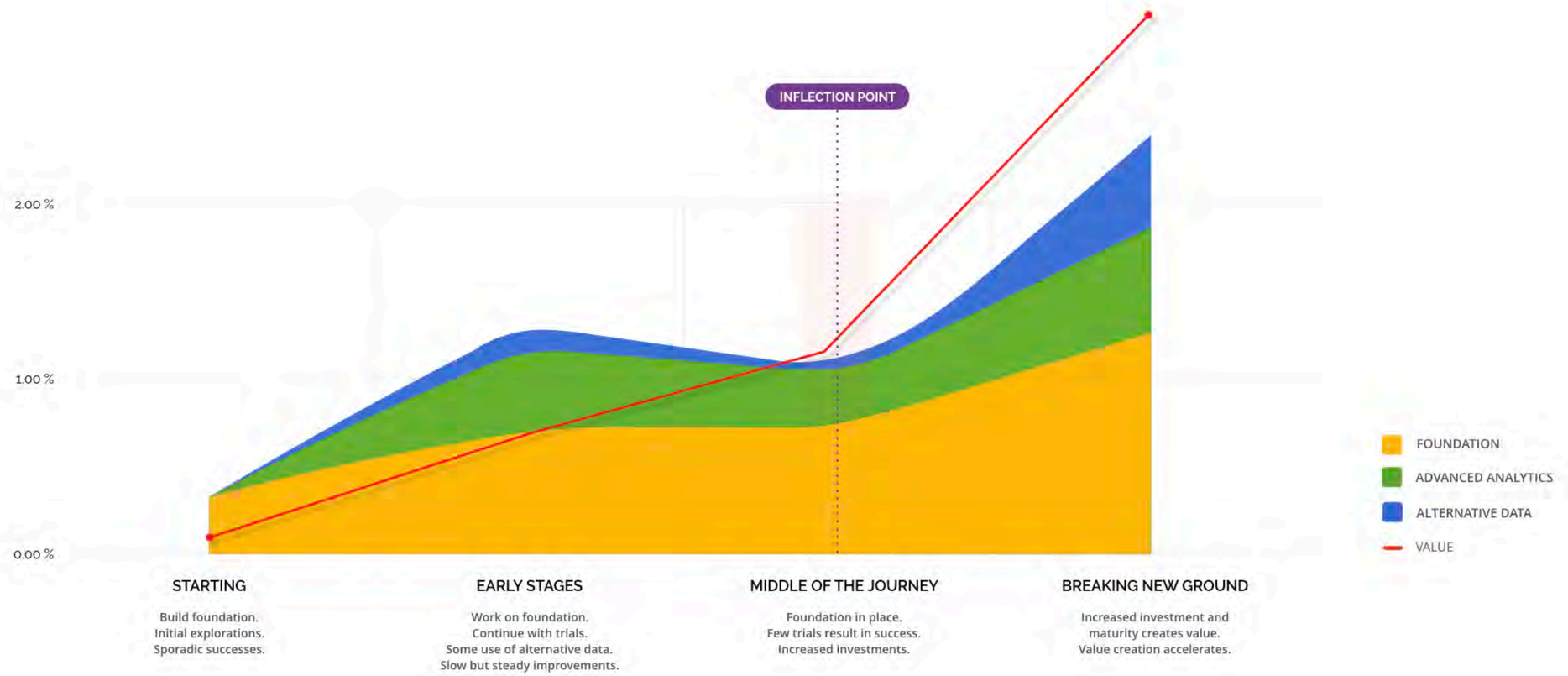




Journey starts with limited investment mostly on foundation and in early stages increases into advanced analytics and some alternative data sets

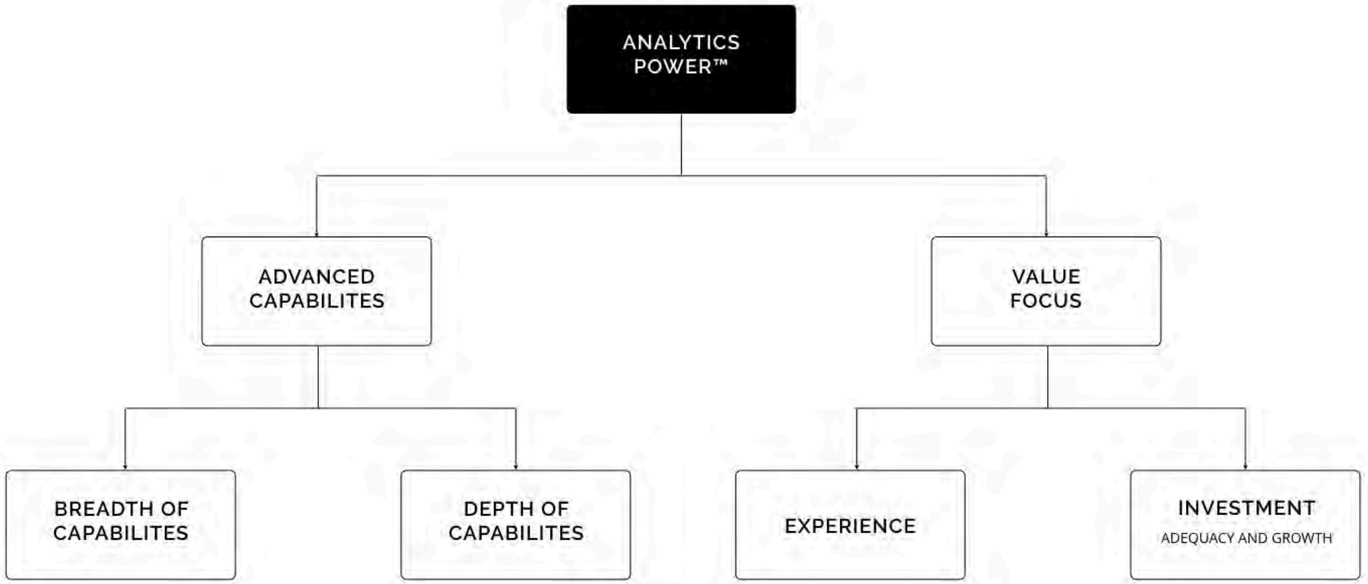
In the middle of the journey investments slightly decrease due to recognition that some content and tools do not bring the value and they are replaced on a smaller scale with new content

After the middle of the journey is reached some of models, combined with content, create tangible value that becomes an inflection point which prompts significant investment and accelerates growth

element22 UBS

03.

ANALYTICS POWER™



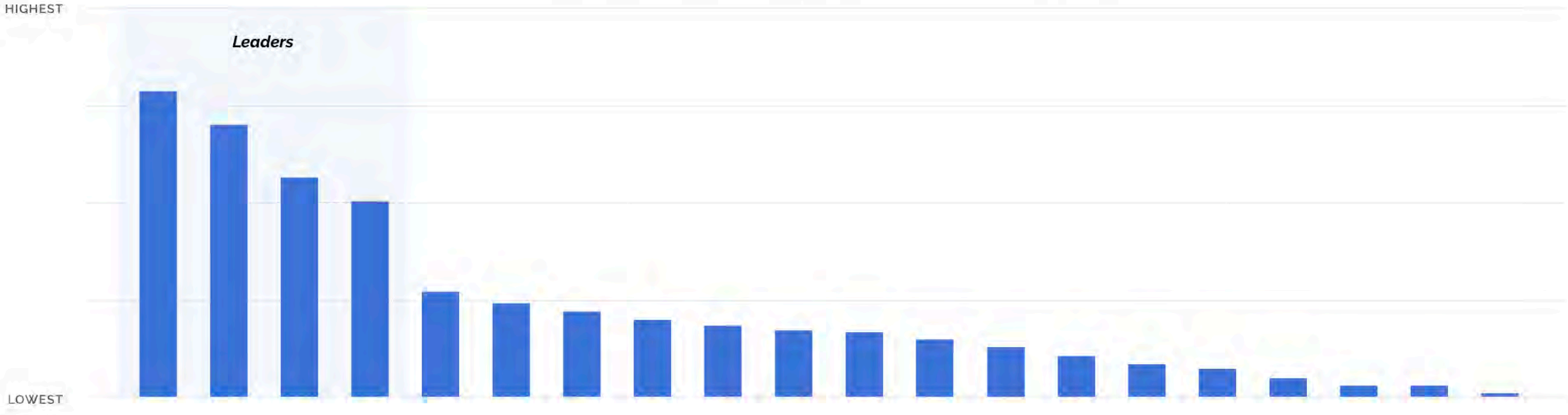
Analytics Power™ provides a summary perspective on the relative potential for firms to generate sustained value from advanced analytics and alternative data

It is comprised of ***Advanced Capabilities*** - defined as the product of *Breadth of Capabilities* scores and *Depth of Capabilities* scores and ***Value Focus*** - defined as the product of *Investment* scores and *Experience* scores

Using Analytics Power™ as a measure of value creation potential from advanced analytics and alternative data reveals clear separation among participants

ANALYTICS POWER™

Three tiers of scores are apparent with *Leaders* substantially ahead of others



NOTES

1 *Breadth of Capabilities* is defined as scope of data management capabilities present, including: strategy, program, governance, market data management, advanced infrastructure (cloud, big data, knowledge graphs, blockchain), data scientists, Alternative Data, Advanced Analytics. *Depth of Capabilities* is defined as the extent and granularity to which these capabilities are implemented.

2 *Investment* is defined as data and analytics funding adequacy and planned growth in 3 year spend on data and analytics capabilities; *Experience* is defined as adoption of Alternative Data and analytics for alpha generation, client acquisition, and business operations activities.

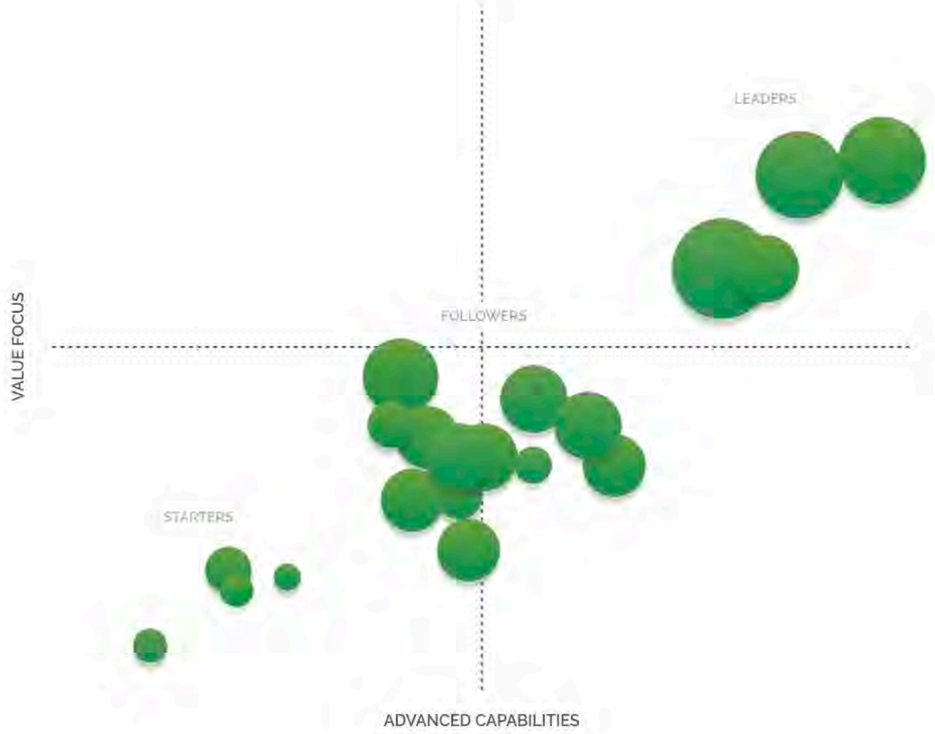
Analytics Power™ of participants falls into three groups, with leaders ramping up investments most aggressively

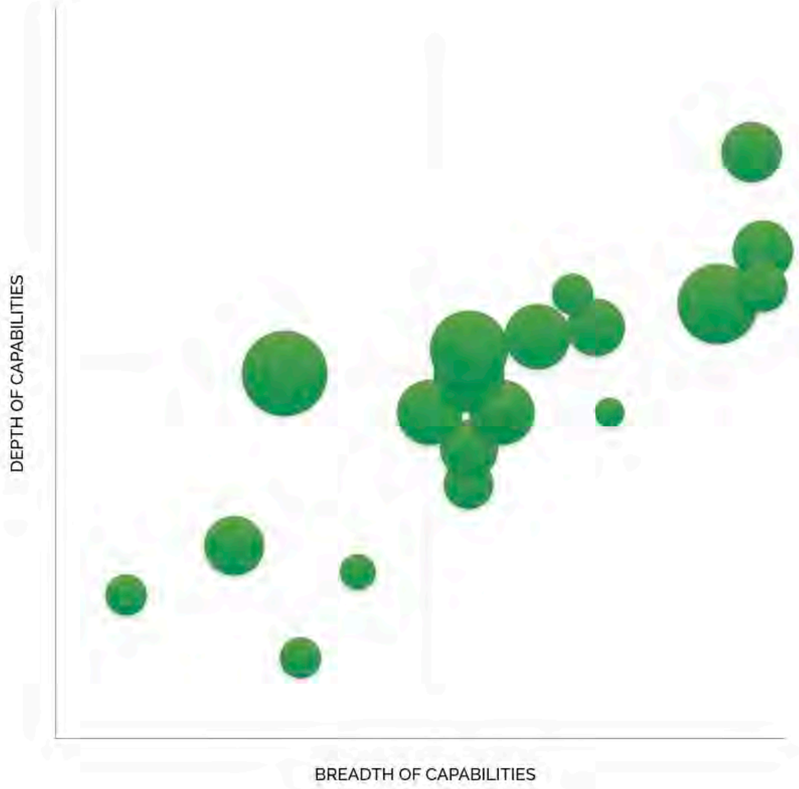
Analytics Power™ reflects the combination of an asset manager's advanced analytics and alternative data capabilities with value focus

Through this lens we see a separation of managers that is unrelated to their size and organization type

Leaders show the greatest increase in expected 3 year investment, suggesting further separation in the coming years

MARKER SIZE INDICATES RELATIVE GROWTH IN 3 YEAR INVESTMENT





Managers generally show ***greater breadth of capabilities*** than depth, suggesting the focus for most is on building foundations

Advanced capabilities is assessed by mapping both the breadth and depth of advanced analytics and alternative data applied across the business.

Managers with the highest combined capabilities also indicate the highest growth in expected 3 year investment.

MARKER SIZE INDICATES RELATIVE GROWTH IN 3 YEAR INVESTMENT

NOTES

Breadth of Capabilities is defined as scope of data management capabilities present, including: strategy, program, governance, market data management, advanced infrastructure (cloud, big data, knowledge graphs, blockchain), data scientists, Alternative Data, Advanced Analytics. *Depth of Capabilities* is defined as the extent and granularity to which these capabilities are implemented.

Managers are more dispersed in terms of investment (adequacy and growth) and experience, suggesting varied emphasis placed on ***advanced analytics*** and ***alternative data*** as a value driver across firms

Value focus is measured by combining experience with advanced data and analytics with investment adequacy and growth

Results for value focus vary among participating asset managers

MARKER SIZE INDICATES RELATIVE GROWTH IN 3 YEAR INVESTMENT

NOTES

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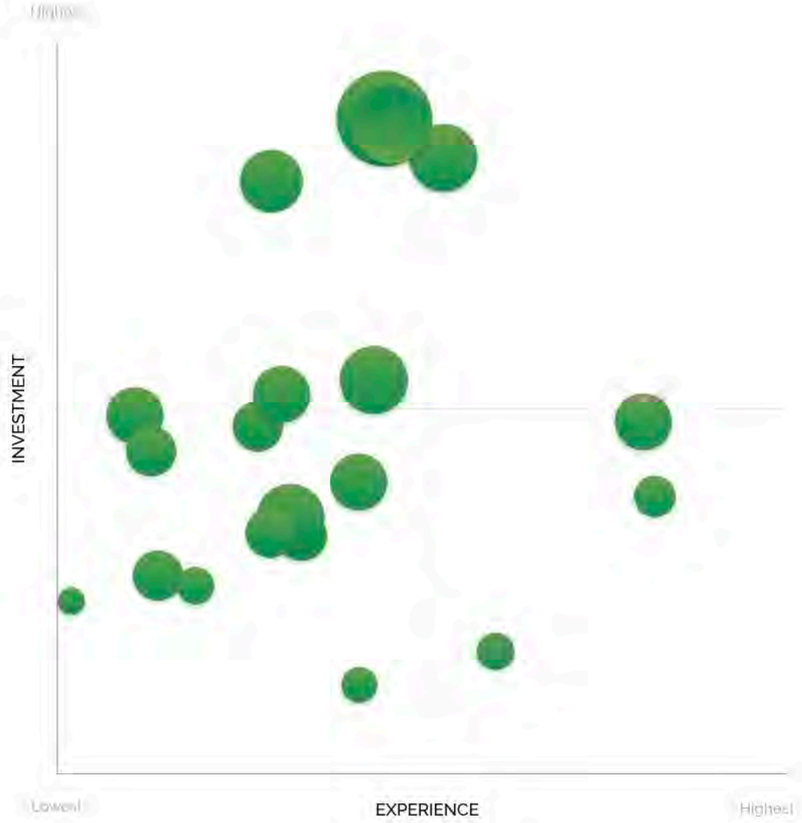


There is **broad-based experimentation** with advanced analytics and alternative data across the spectrum of asset managers

Value is starting to be **realized by leaders**, particularly with regard to alpha generation, and this is stoking higher levels of **business satisfaction and investment**

Managers that are **starting** their journey should be prepared for **initial experimentation**, a **multi-year journey**, and expect to **ramp up investment** to generate sustained value and competitive differentiation

01 / Start experimenting with advanced analytics and alternative data immediately

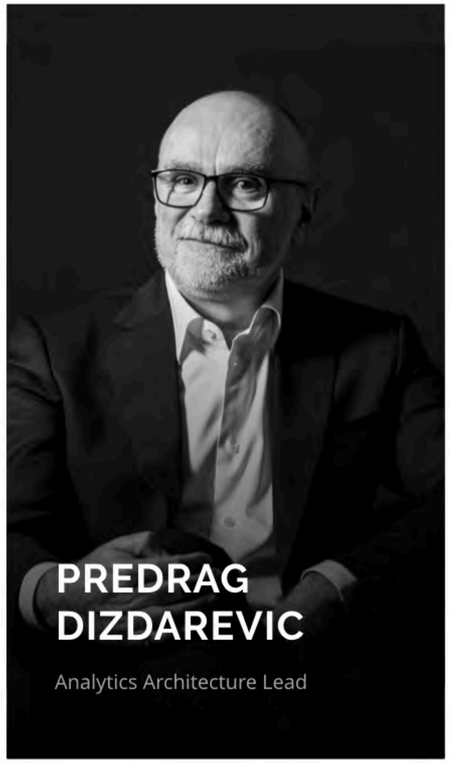
02 / Acquire data scientist talent to complement quants and fundamental skillsets

03 / Leverage the cloud to accelerate use of advanced analytics for alternative data

In future reports, we expect to see increased emphasis on **value creation** reflected in the results and **further separation** of select managers that view advanced analytics and alternative data as levers of **strategic advantage**

We plan to execute this benchmark on an **annual basis** to monitor progress and trends

CONTRIBUTORS



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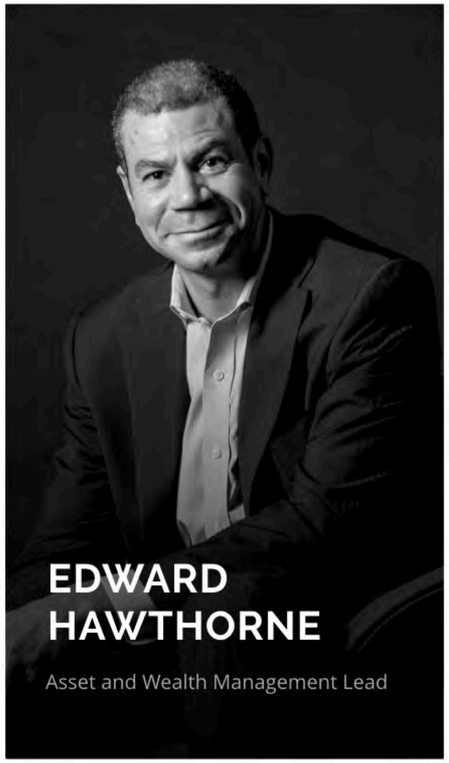

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