

Data Science for a Better Future





DATA SCIENCE
ASSOCIATION

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Is your organization trying to find new ways to generate revenue?

Most organizations apply predictive analytics to core functions that **produce revenue**.



52% use predictive analytics to **increase profitability**

55% use predictive analytics to create **new revenue opportunity**

Are you looking for ways to increase customer satisfaction?

45% of organizations currently use predictive analytics for customer services



What data in your organization can predictive analytics tap to help you discover new trends and opportunities?

The **top 5** sources of data tapped for predictive analytics:



40% of companies are evaluating or plan to use social media data

Are you using the right product offers and targeting the best customers for your up-sell and cross-sell?

43% of organizations currently use the results of predictive analytics for product recommendations and offers



What impact can predictive analytics have on your organization?

86% assert that predictive analytics will have a **major positive impact** on their organization.

with nearly **one-third** indicating it could be transformative in enabling them to do things they couldn't do before



How can your organization gain a competitive edge and respond in real time?

68% of organizations who use predictive analytics have **realized a competitive advantage**

With **real-time predictive analytics**, you can make sure your company doesn't miss its window of opportunity.



What are the 5 things predictive analytics can do for you?

- 1 Instantly predict market trends and customer needs
- 2 Create customized offers for each segment and channel
- 3 Predict how market-price volatility will impact your production plans
- 4 Forsee changes in demand and supply across your entire supply chain
- 5 Proactively manage your workforce by attracting and retaining talent

Where do you want your company analytics to be?

Predictive analysis enables you to extend your analytics capabilities: Moving from the rearview mirror to a **forward-looking view**.



More than **85%** of business and IT leaders agree that the value of Big Data is in its ability to:

**MAKE
INTELLIGENT
BUSINESS
DECISIONS**

&

**FOSTER
A DATA-DRIVEN
ORGANIZATION.**

Big Data Hype

80% of big data projects fail

Smart data vs. big data

Variety of data vs. big data

Technology hype

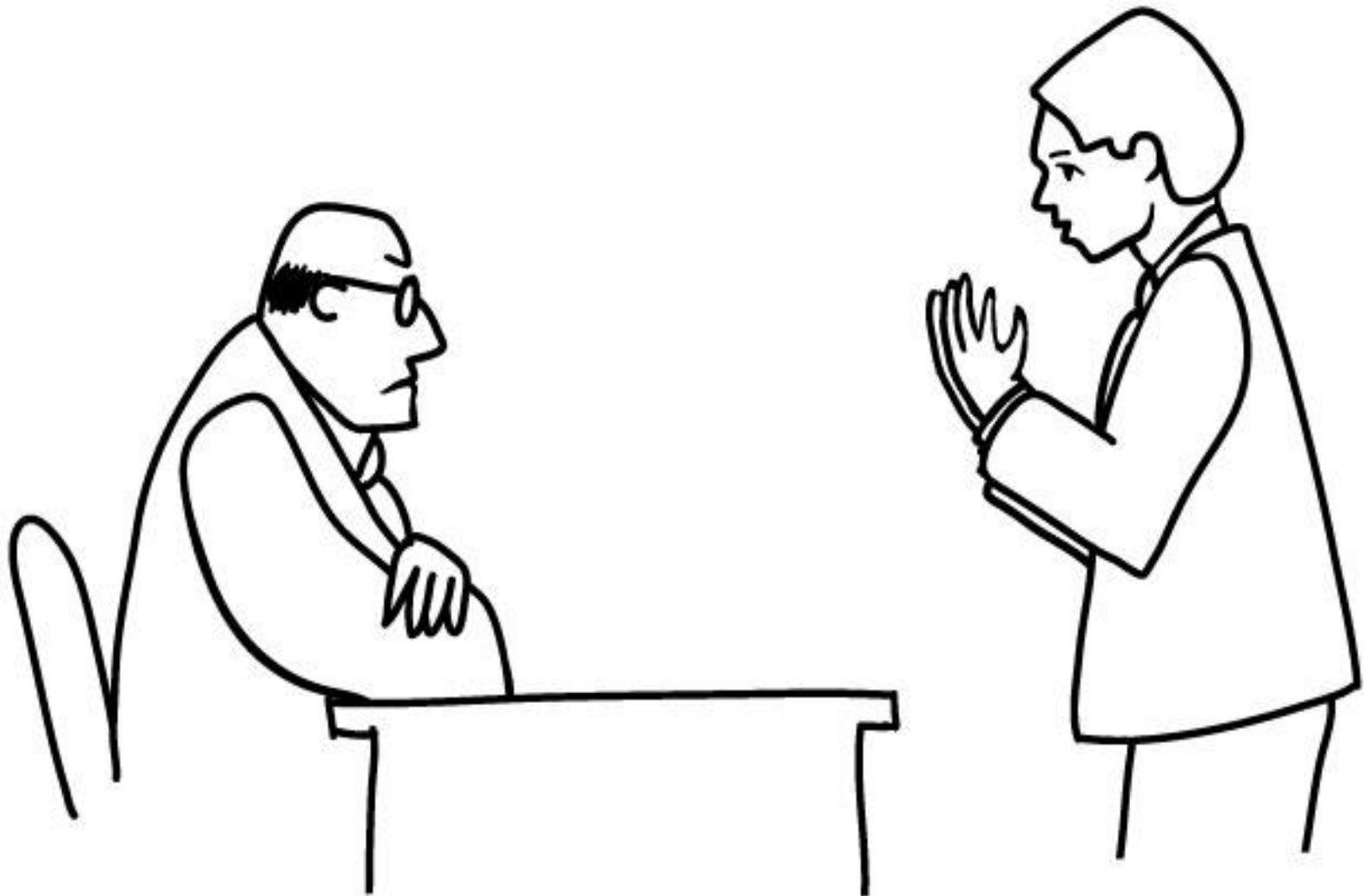
Business intelligence (BI) hype

Data science hype

Data science vs. data engineering

Goal: optimal decision-making

BI	Big Data
Data Subsets	ALL Data & Meta Data
Historical	Near Real-time
Structured Data	Structured & Unstructured
Single Source or Application	Multiple sources / Apps
Static	Dynamic
Private Data	Private & Public
Data growth as a burden to manage	Data as a new source of competitive opportunity



*“Yes, Sir, I tried to build an ROI case for our BI project --
but I couldn’t access any reliable data!”*

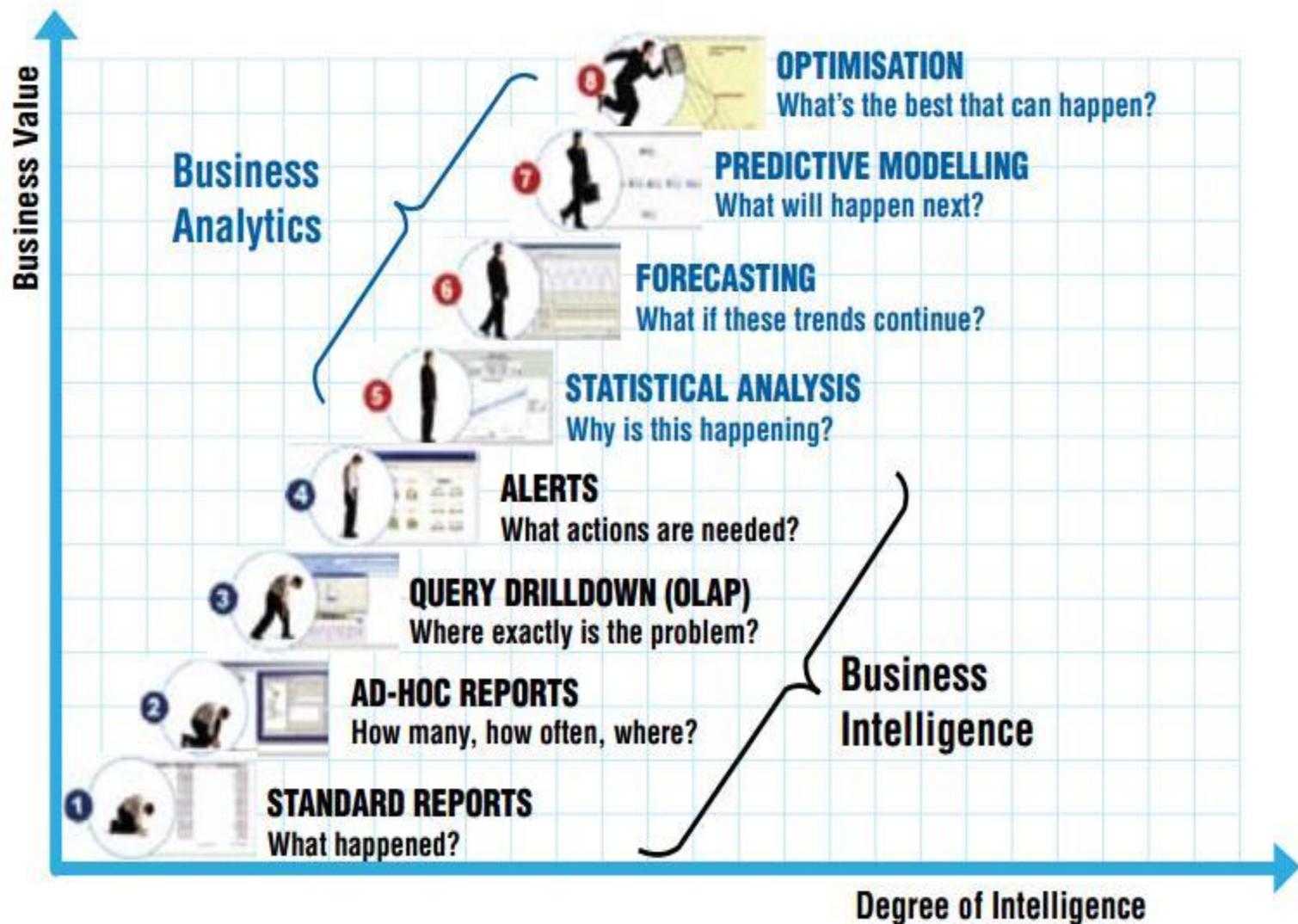
Top 5 Data Challenges

1. Flawed DW / BI design
2. Cost of technology infrastructure
3. Shortage of data scientists
4. Lack of skills to manage big data projects
5. Lack of skills to analyze the data

Data Science Definition

"Data Science" means the scientific study of the creation, validation and transformation of data to create meaning.

Eight Levels of Analytics



Benefits of Data Science

Discovering what we don't know from data

Benefits of Data Science

Discovering what we don't know from data

Obtaining predictive, actionable insight

Benefits of Data Science

Discovering what we don't know from data

Obtaining predictive, actionable insight

Creating data products with impact

Benefits of Data Science

Discovering what we don't know from data

Obtaining predictive, actionable insight

Creating data products with impact

Communicating relevant stories

Benefits of Data Science

Discovering what we don't know from data

Obtaining predictive, actionable insight

Creating data products with business impact

Communicating relevant business stories

Better decision making

Benefits of Data Science

Discovering what we don't know from data

Obtaining predictive, actionable insight

Creating data products with impact

Communicating relevant stories

Better decision making

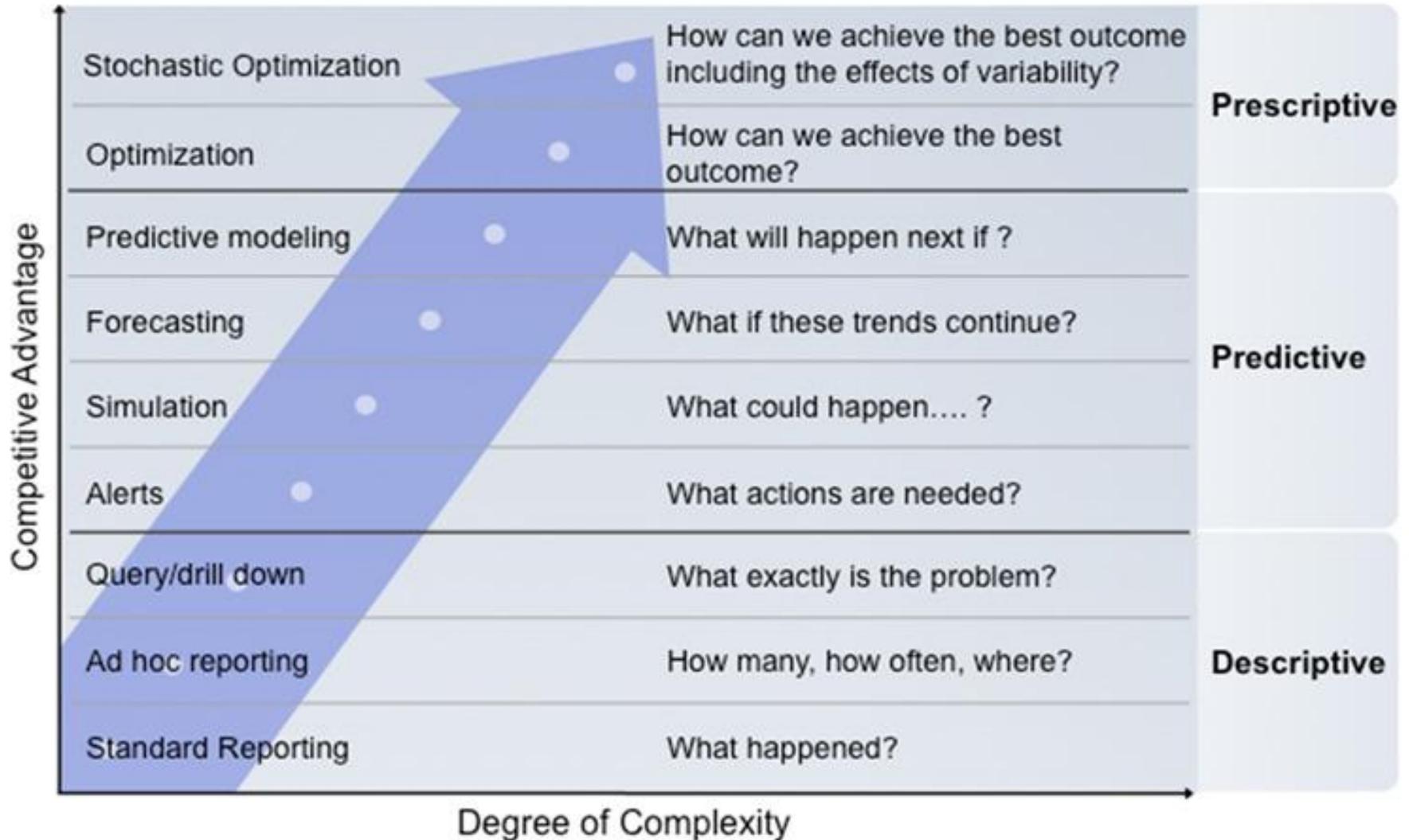
Add organization and client value

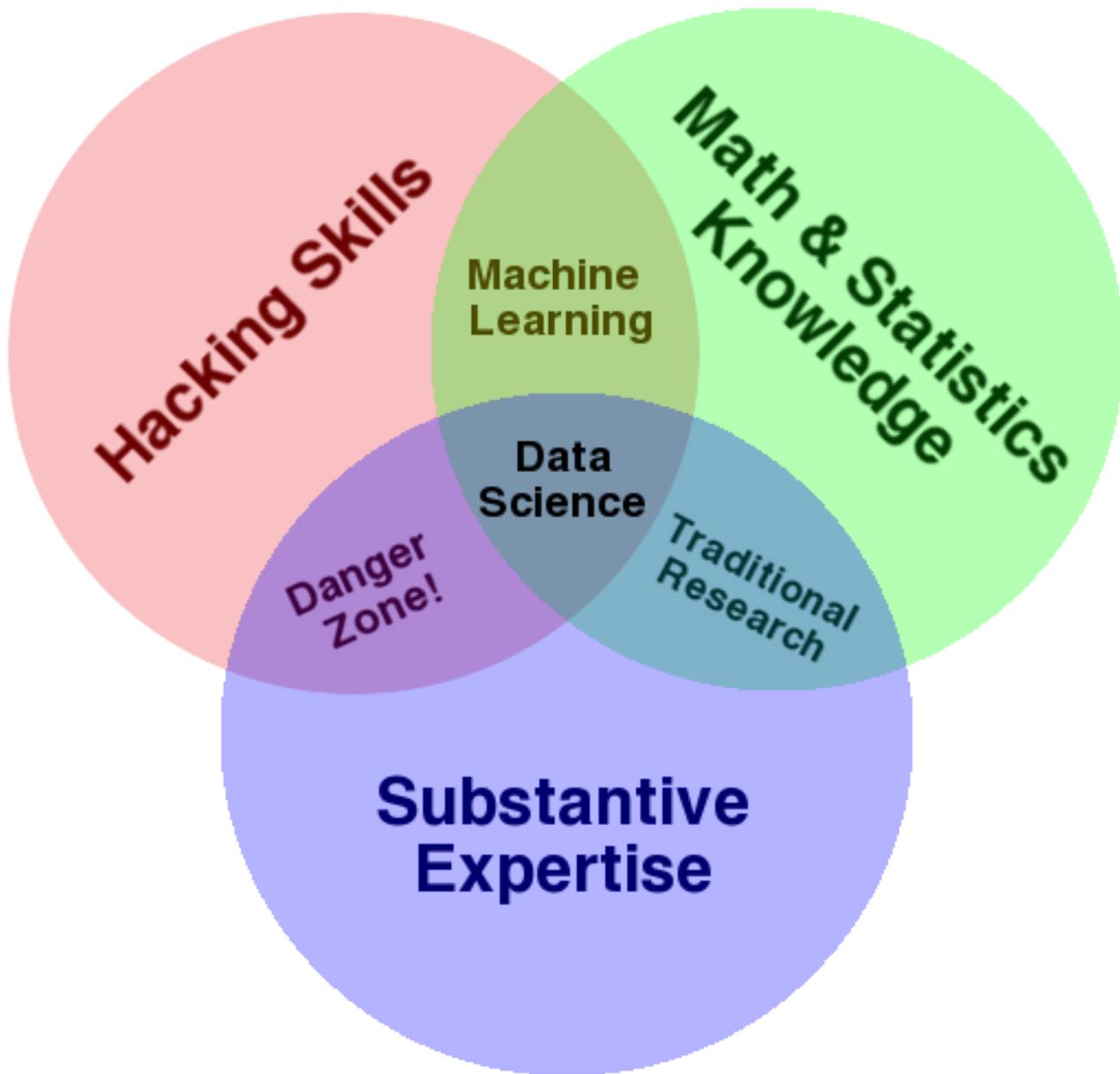
Data Scientist Definition

A "Data Scientist" is a professional who uses scientific methods to liberate and create meaning from raw data - somebody who can play with data, spot trends and learn truths few others know.

Data scientists are inquisitive: exploring, asking questions, doing “what if” analysis, questioning existing assumptions and processes.

Types of Analytics





Types of Data Analysis

Analytic Types	Descriptive Title	Quantitative Sophistication/Numeracy	Sample Roles
Type I	Quantitative R&D	PhD or equivalent	Creation of theory, development of algorithms. Academic /research. Work in business/government for very specialized roles
Type II	Data Scientist or Quantitative Analyst	Advanced Math/Stat, not necessarily PhD	Internal expert in statistical and mathematical modelling and development, with solid business domain knowledge.
Type III	Operational Analytics	Good business domain, background in statistics optional	Running and managing analytical models. Strong skills in and/or project management of analytical systems implementation
Type IV	Business Intelligence/Discovery	Data and numbers oriented, but no special advanced statistical skills	Reporting, dashboard, OLAP and visualization, some design, posterior analysis of results from quantitative methods. Spreadsheets, "business discovery tools"

Data Engineers

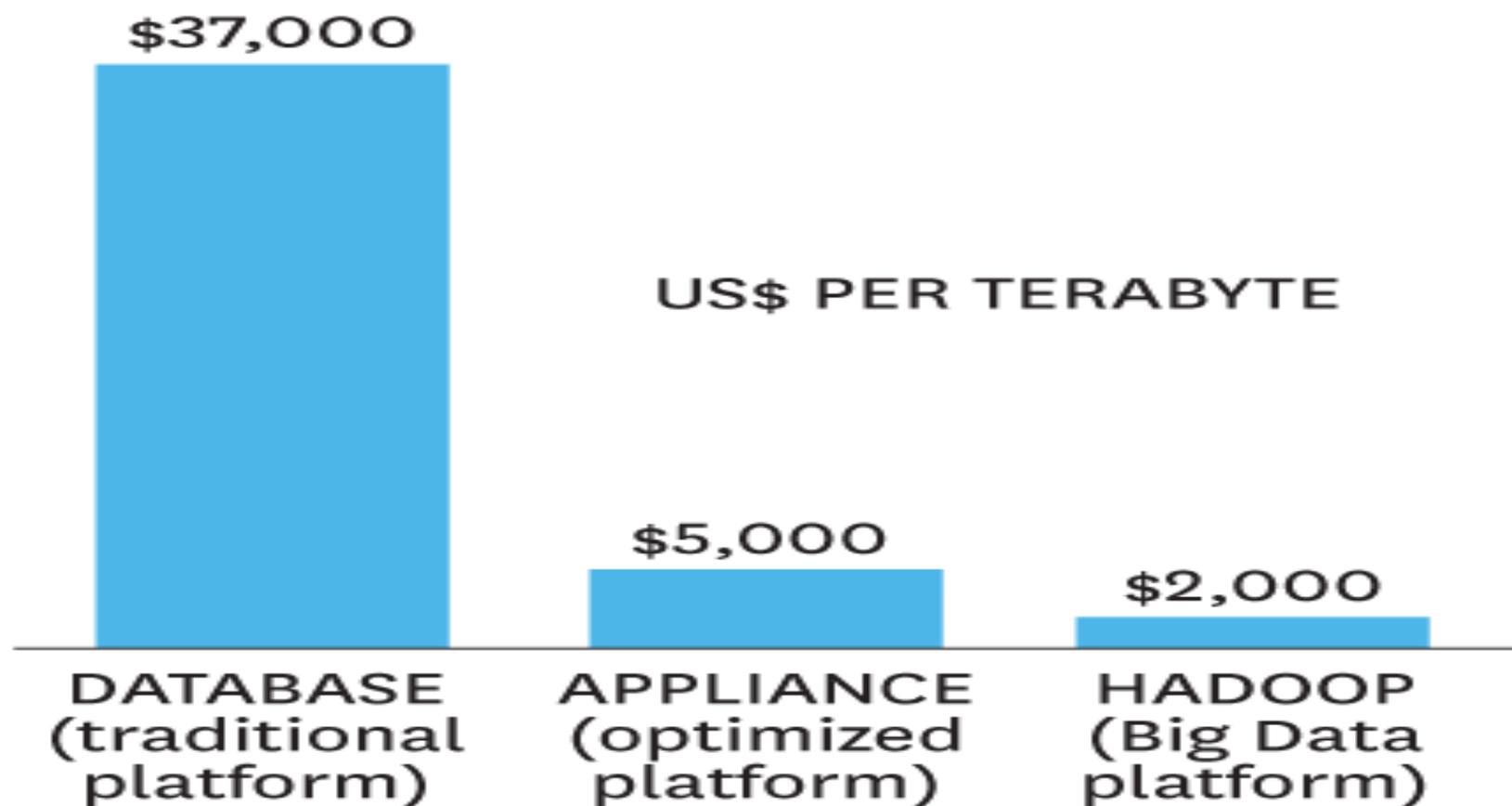
The designers, builders and managers of the big data infrastructure.

They develop the architecture that helps analyze and process data in the way the business needs it.

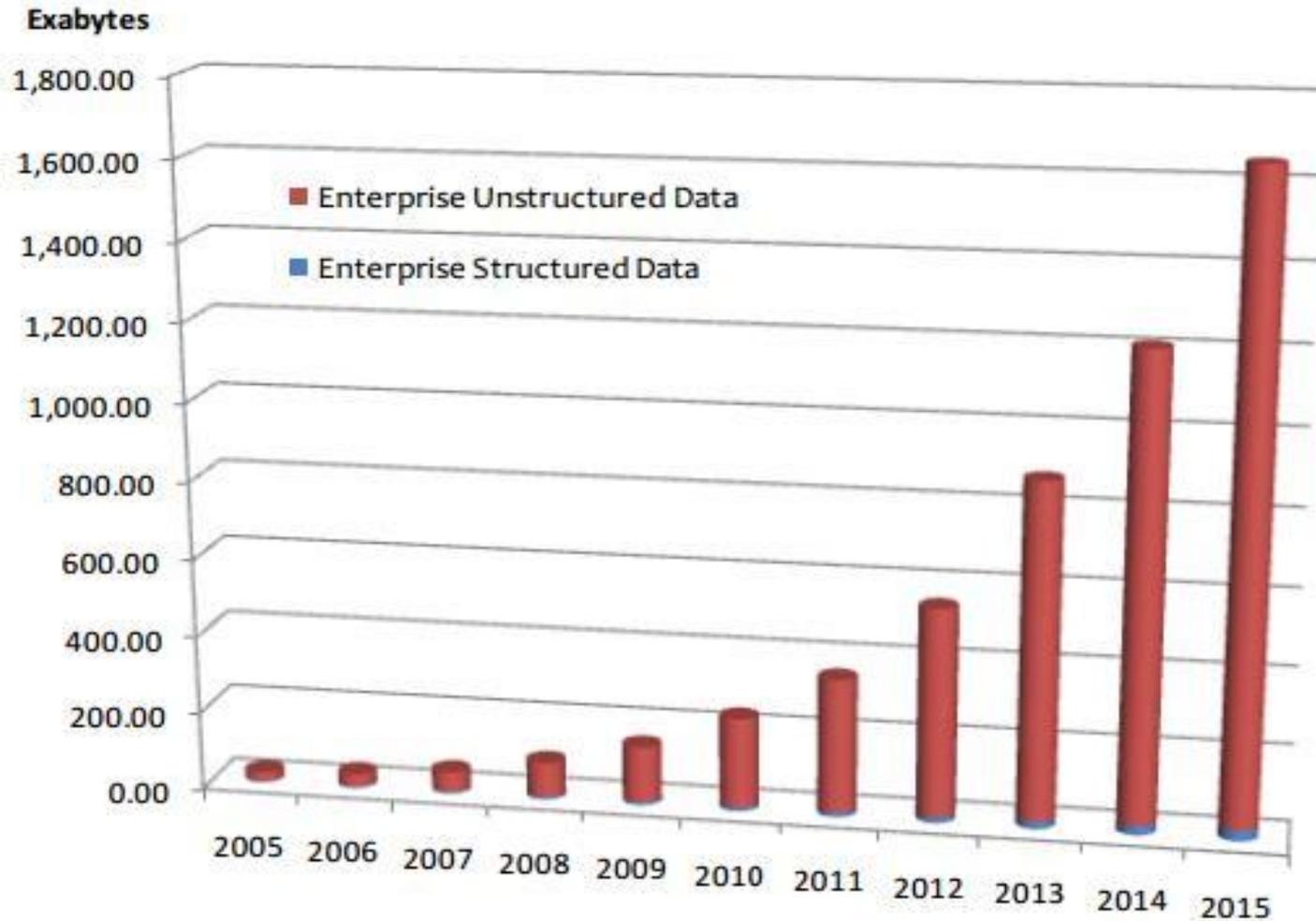
And they make sure those systems are performing smoothly.

COST OF BIG DATA PLATFORMS VS. TRADITIONAL DATABASE PLATFORMS

Dramatic cost savings result from Big Data platforms versus traditional data platforms or newer optimized platforms.

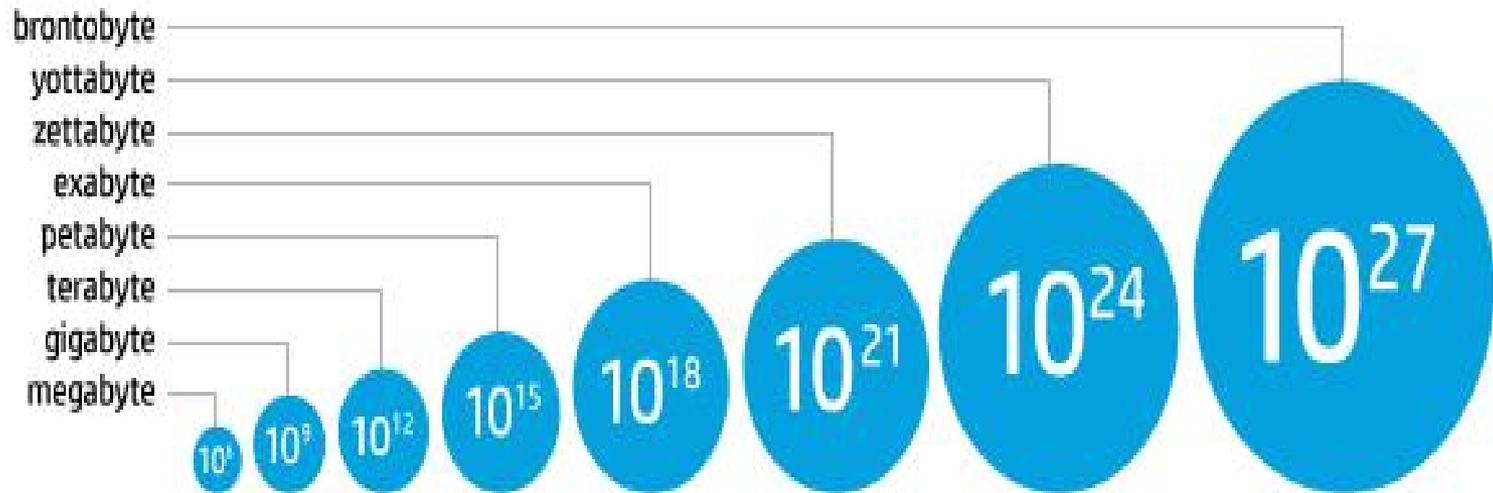


Total Enterprise Data Growth 2005-2015



The Internet of Things

Information & the Internet of Things

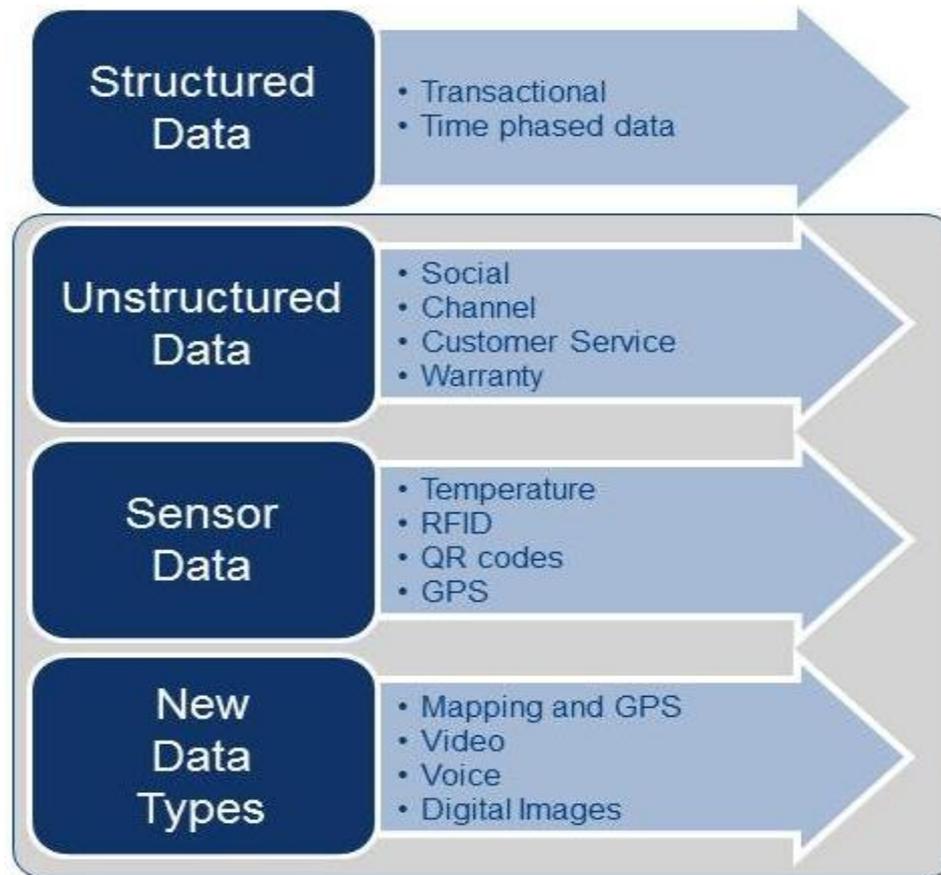


Today, data scientists max out at yottabytes, but soon, brontobytes will measure the volume of sensor data generated by the Internet of Things.

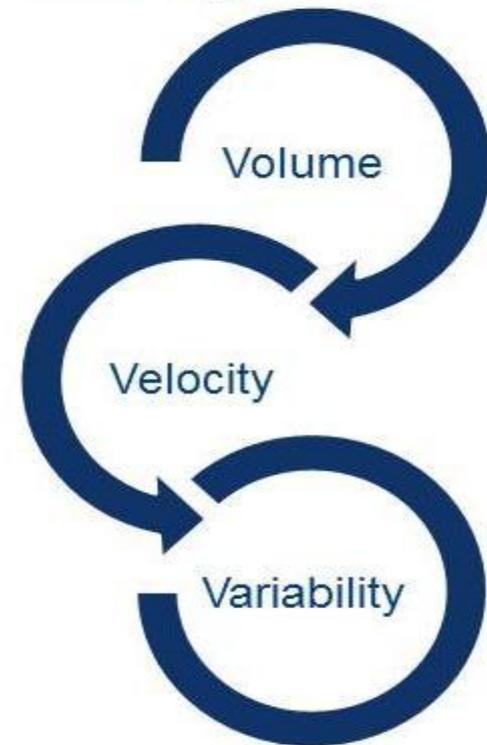
Source: HP

The Data Supply Chain

Big Data Supply Chains



Challenges:



Data Science is a Team Sport

Job Title	Description
Data Scientist	Data scientists support critical business requirements by creating sophisticated methods of mining data for patterns that can be turned into business value.
Digital Archivist	Digital archivists are responsible for appraising, acquiring, arranging, describing and preserving digital material over time. They also specify, help to select, and maintain hardware and software that support its retention and ongoing use.
Information Manager	Information managers promote efficient creation, valuation, access, organization, use and archival of information within business units by using methodologies, policies and technology to collect, process, condense and store the information that the business units produce.
Data and Information Visualization Designers	Designers with mathematical, modeling and graphical design skills render large, complex datasets in a simple visual form.
Legal IT Professional	IT legal professionals help set the strategy, design and manage the processes, and oversee the standards involved in collecting information for regulatory or legal requests.
Data/Information Steward	Stewards act as trustees of data, are intimately knowledgeable with business processes and data usage, and are responsible for the effectiveness of an information governance program.

Source: Gartner (May 2012)

Data Science Teams

Business architects: Team leaders

Data scientists: Find actionable insights

Data engineers: Technology

Data architects: Programmers

Data visualizers: Translate into lay understanding

Data change agents: Drive changes in processes

Data analysts: Data curation & models

Business analysts: Domain expertise

Data Science Tools

Scientific methods

Analytical techniques

Machine learning techniques

Deep learning

Algorithm design and execution

Data visualization and story-telling

Statistics

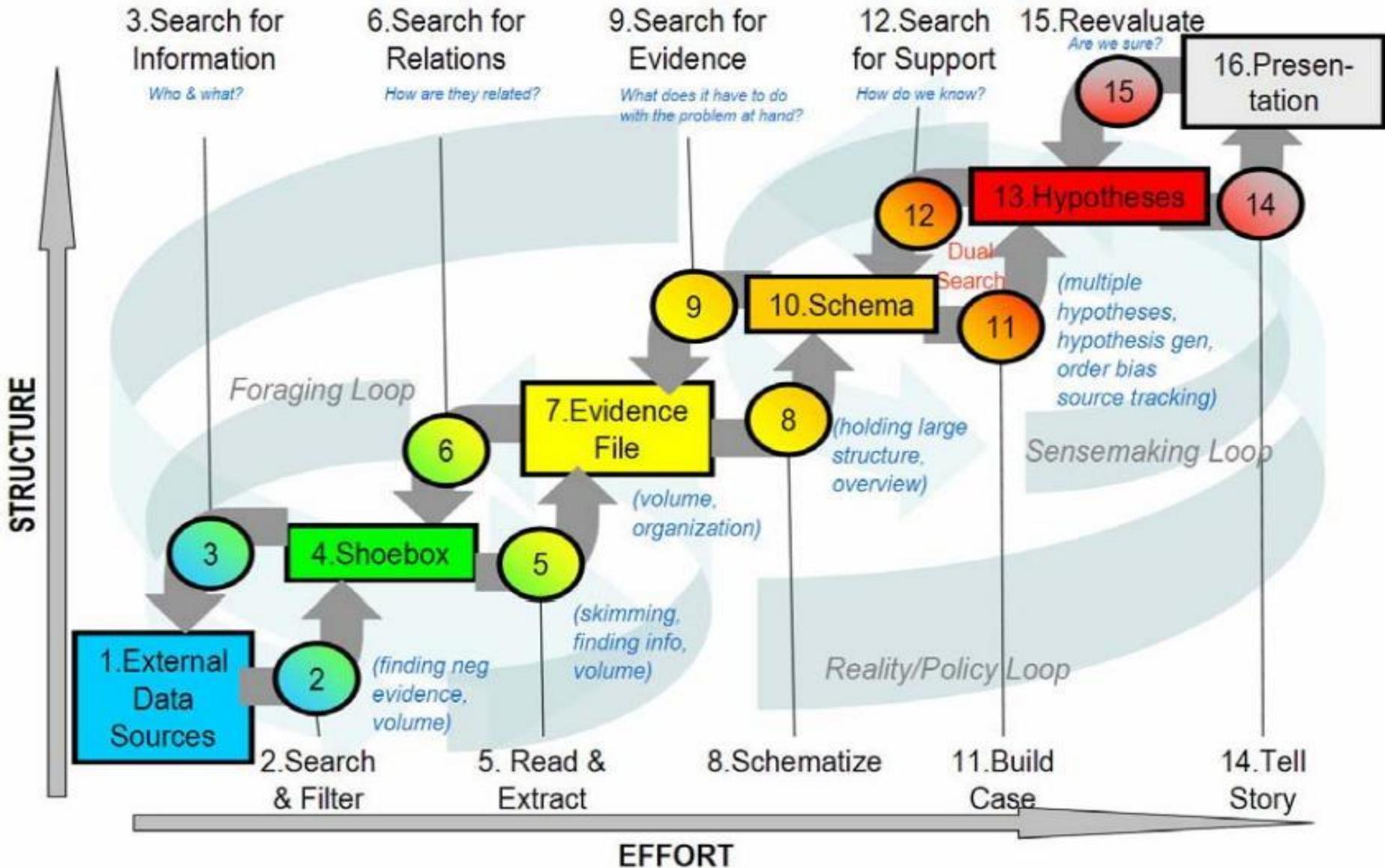
Math

Neural networks

Data mining

Data modeling

Data Science Formula



Domains

Finance

Retail

Marketing / sales

Human resources

E-commerce / advertising

Health care / biotech / pharma

Legal system / law enforcement

National and business security

Government services

Non-profit / education

Energy

Manufacturing / IOT

Applications

Predict market trends

Predict customer needs

Create customized offers for each segment and channel

Predict changes in demand and supply across the entire supply chain

Hire the right people

Manage the workforce

Predict who is likely to quit their job

Predict how market-price volatility will impact your production plans

Manage risk

Applications

Fraud detection

Decision support systems

Collection analytics

Cross-selling

Customer retention

Portfolio design and management

Product design

Economic forecasts; risk management

Insurance underwriting

Non-profit Applications

Attract new members

Reduce membership churn

Predict member / subject interests

Optimize human capital

Optimize operations

Predict future trends

Select best conference locations

Book: Tribal Leadership

Dave Logan

John King

Halee Fischer-Wright

Five stages of tribal development

STAGE 1

Shared by most street gangs and characterized by despair, hostility, and the collective belief that "life sucks."

STAGE 2

Filled primarily with apathetic people who perceive themselves as victims and who are passively antagonistic, with the mind-set that "my life sucks."

Think The Office on TV or the Dilbert comic strip.

STAGE 3

Focused primarily on individual achievement and driven by the motto "I'm great (and you're not)."

People in organizations at this stage "have to win, and for them winning is personal. They'll outwork and outthink their competitors on an individual basis.

The mood that results is a collection of "lone warriors."

STAGE 4

Dedicated to tribal pride and the overriding conviction that "we're great (and they're not)."

This kind of team requires a strong adversary, and the bigger the foe, the more powerful the tribe.

STAGE 5

A rare stage characterized by a sense of innocent wonder and the strong belief that "life is great."

Thank You

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