Convergence of Analytics and Business Intelligence, Data Science and AI

Published 5 April 2021 - ID G00745927 - 4 min read

Carlie Idoine

Initiatives: Analytics, BI and Data Science Solutions; Artificial Intelligence

Often, there's a lack of clarity on the elements of analytics and business intelligence, data science, machine learning and AI, and how they interact with one another. Data and analytics leaders can use this infographic as a starting point to differentiate and understand the nuances within each.

Additional Perspectives

- Summary Translation: Convergence of Analytics and Business Intelligence, Data Science and AI
  (27 April 2021)

Analytics and Business Intelligence Versus Data Science Versus Artificial Intelligence

Gartner

Convergence of Analytics & BI, Data Science and AI

Analytics & BI

An accessible functionality that supports a full analytic workflow that emphasizes self-service usage and augmented consumers for better decision making.

Data Science

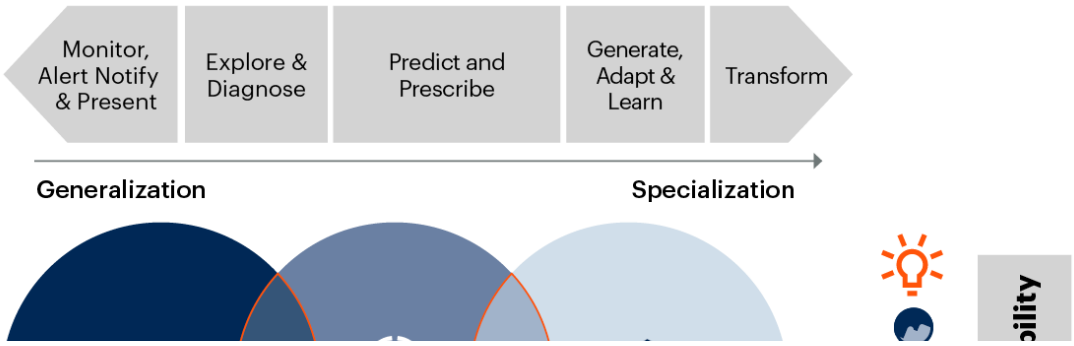
A multidisciplinary field aimed at extracting data insights through various techniques, such as machine learning.

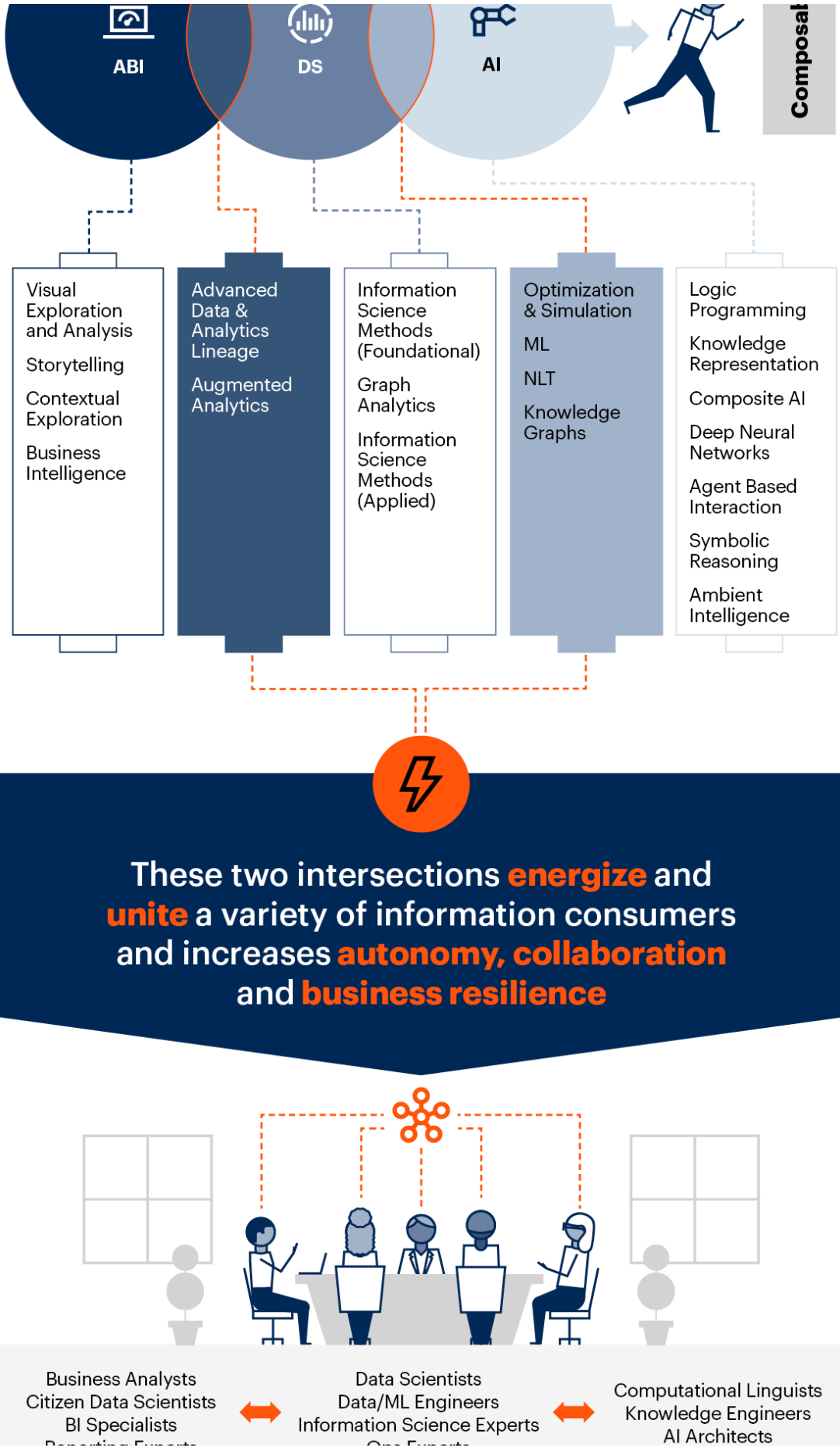
Artificial Intelligence

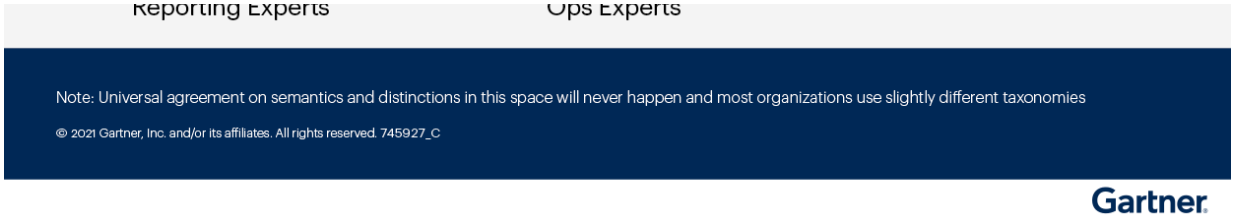
A computer engineering discipline that leverages advanced analysis and logic-based techniques, to interpret events, support and automate decisions, and to take actions.

Note: Please refer to the research document for more detailed definitions of each field.

The collision of these three worlds give information consumers agility and decision intelligence while creating opportunity to transform the data and analytics ecosystem




ABI
DS
AI
Composal
Visual Exploration and Analysis
Storytelling
Contextual Exploration
Business Intelligence
Advanced Data & Analytics Lineage
Augmented Analytics
Information Science Methods (Foundational)
Graph Analytics
Information Science Methods (Applied)
Optimization & Simulation
ML
NLT
Knowledge Graphs
Logic Programming
Knowledge Representation
Composite AI
Deep Neural Networks
Agent Based Interaction
Symbolic Reasoning
Ambient Intelligence
These two intersections energize and unite a variety of information consumers and increases autonomy, collaboration and business resilience
Business Analysts
Citizen Data Scientists
BI Specialists
Data Scientists
Data/ML Engineers
Information Science Experts
Computational Linguists
Knowledge Engineers
AI Architects



About This Research

The proliferation of augmented capabilities, cloud and other accelerants within data access, data management, analytics, business intelligence, and data science and machine learning products is making once distinct markets collide. To harness the energy released, data and analytics leaders must anticipate big changes in products, investments and practices.

The metaphor of a "collision" of data and analytics worlds describes the increasing convergence of multiple, related elements. In this research, we explore the most fundamental pieces of the data and analytics world: analytics and business intelligence, data science and artificial intelligence, and how they converge and overlap. Data and analytics leaders are often confused with the applicability, definitions and what constitutes these "worlds," which we aim to clear up.

This convergence creates an opportunity to transform the data and analytics ecosystem, as well as the approach to orchestrating the analytics life cycle.

- **Analytics and business Intelligence (ABI)** is characterized by easy-to-use functionality that supports a full analytic workflow, with an emphasis on self-service usage and augmented users to enable us with better decision making in the simplest way possible. Analytics has emerged as a catch-all term for a variety of different business intelligence (BI) and application-related initiatives. BI is an umbrella term that includes the applications, infrastructure and tools, and best practices that enable access to, and analysis of, information to improve and optimize decisions, enable decision support and performance.
- **Data science (DS)** is a multidisciplinary field aimed at extracting insights, enabling review and exploration of structured or unstructured data through processes, tools and various techniques. Data science leverages techniques, such as machine learning, among others, shared with the AI discipline.

- **Artificial Intelligence (AI)** is a computer engineering discipline — i.e., a series of mathematically or logic-based techniques, uncovering, capturing, coding knowledge, and leveraging sophisticated and clever mechanisms to solve problems — i.e., interpret events, support and automate decisions, and take actions. Not all AI techniques leverage data — symbolic techniques, for example, leverage logic predicates.

The ABI and DS worlds are colliding with the rise of end-to-end platforms that support full analytics workflow, with emphasis on self-service. With the rise of augmented analytics and natural language processing (NLP), it's giving more power to the information consumer to become a power user. This could go all the way from supporting data management to insight generation to embedding models in applications.

The DS and AI worlds are colliding with the rise in need of collecting, analyzing, classifying, manipulating, moving, disseminating and retrieving information in new ways to enable decision augmentation. There is a clear demand in the data science and machine learning marketspace to support multipersona collaboration across data analysts, citizen data scientists, data scientists, data engineers, business experts and AI experts to enable decision intelligence by enabling experts with insights and information across the organization.

One must look at ABI, DS, AI as a spectrum of capabilities that assists with decision engineering and augmentation, ultimately empowering the information consumer who could be a person or a group of people responsible for making tactical or strategic decisions. The insights generated from said capabilities enables them to make better choices when they are informed and have a greater capacity to understand the importance of their decisions, actions and choices.

The ultimate aim of ABI, DS and AI is to take organizations toward a more flexible, adaptable and composable analytic approach through the following journey:

1. **Monitor, alert, notify and present:** With the use of visual exploration and analysis, storytelling, dashboarding and reporting, contextual exploration and business intelligence.

2. **Explore and diagnose:** With the use of augmented analytics and self serving tools, the ABI space is converging toward data science. Primarily with the support of augmented analytics tools and platforms the standard business user is now becoming a power user and an information consumer.

3. **Predict and prescribe:** Using information science methods such as computer science, statistical analysis, some machine learning techniques, cognitive science, domain and subject matter expertise from diverse fields is allowing organizations to understand and predict the future behavior of different systems.

4. **Generate, adapt and learn:** Using advanced analysis techniques such as machine learning, deep learning, simulation and optimization techniques based on heuristics, ambient intelligence, agent based interaction, symbolic reasoning, knowledge graphs and so forth allows organizations to explore and build adaptive systems. These systems are able to generate new information, adapt to changes in data or business operations and learn from them.

The worlds of ABI, DS and AI enable organizations to move toward an analytic approach that is driven by democratization, decision intelligence and augmentation. This increases autonomy, collaboration among stakeholders and business resilience.

Related Terms: BI, Business Intelligence, Data Science, Data Analytics, Machine Learning, Business Analytics, Artificial Intelligence, Big Data, Data Warehouse, Data Analysis, Statistics, Data Mining

Recommended by the Authors

Composable Analytics Shapes the Future of Analytics Applications

Top Strategic Technology Trends for 2021: Intelligent Composable Business

How Augmented DSML Makes Data Science Projects More Efficient

Infographic: Common Layers of Data Science and Machine Learning Activity

3 Types of Machine Learning for the Enterprise

Magic Quadrant for Data Science and Machine Learning Platforms