Sólo aquel que se consagra a una causa con toda su fuerza y alma puede ser un verdadero maestro. Por esta razón, ser maestro lo exige todo de una persona". Albert Einstein

The Evolution of Analytics: Challenges and Opportunities

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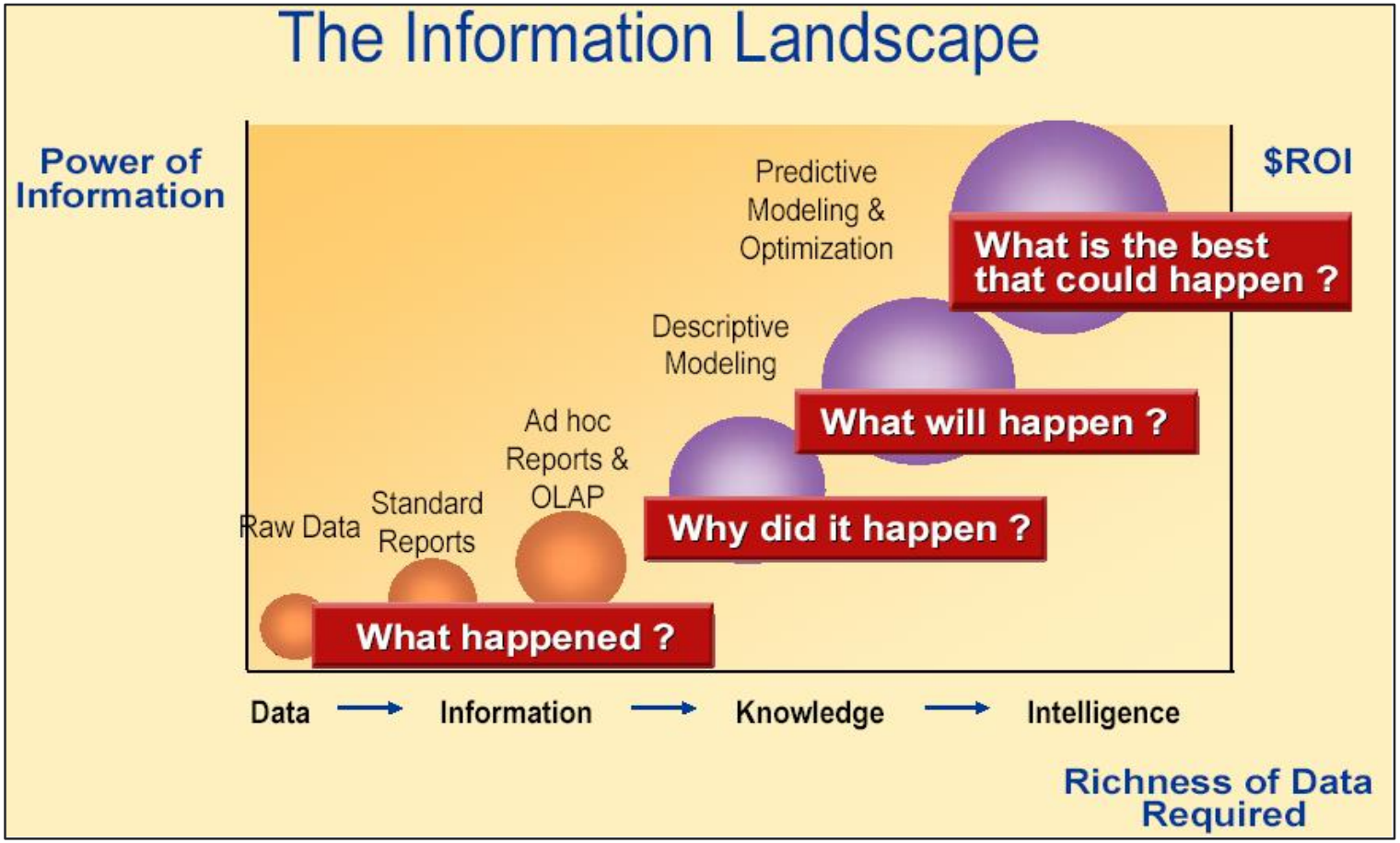
Agenda

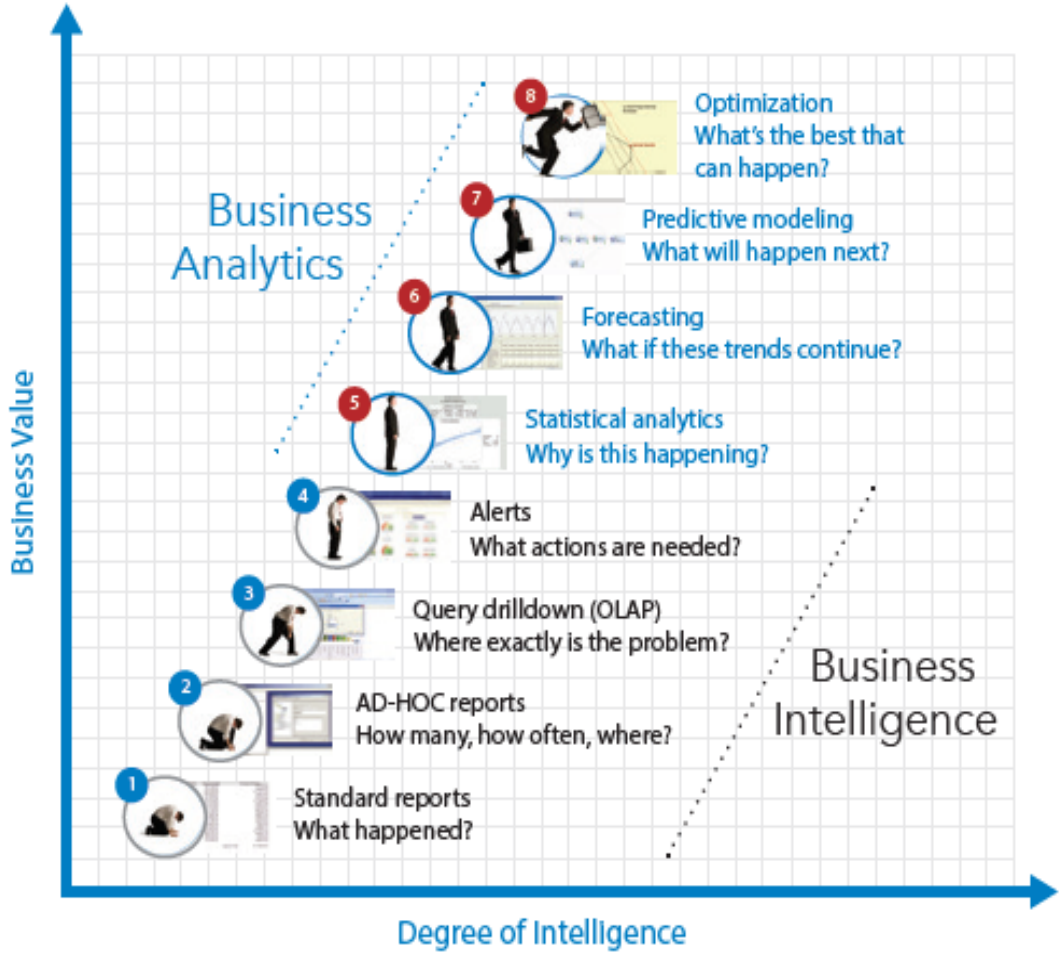
1. The Data-driven Organizations.
2. The Analytics Life Cycle.
3. The Binomial: Technology – Analytics.
4. The Era of The Data Economy.
5. The University in the Analytics Marathon.
6. Summary.

The Data-driven Organizations



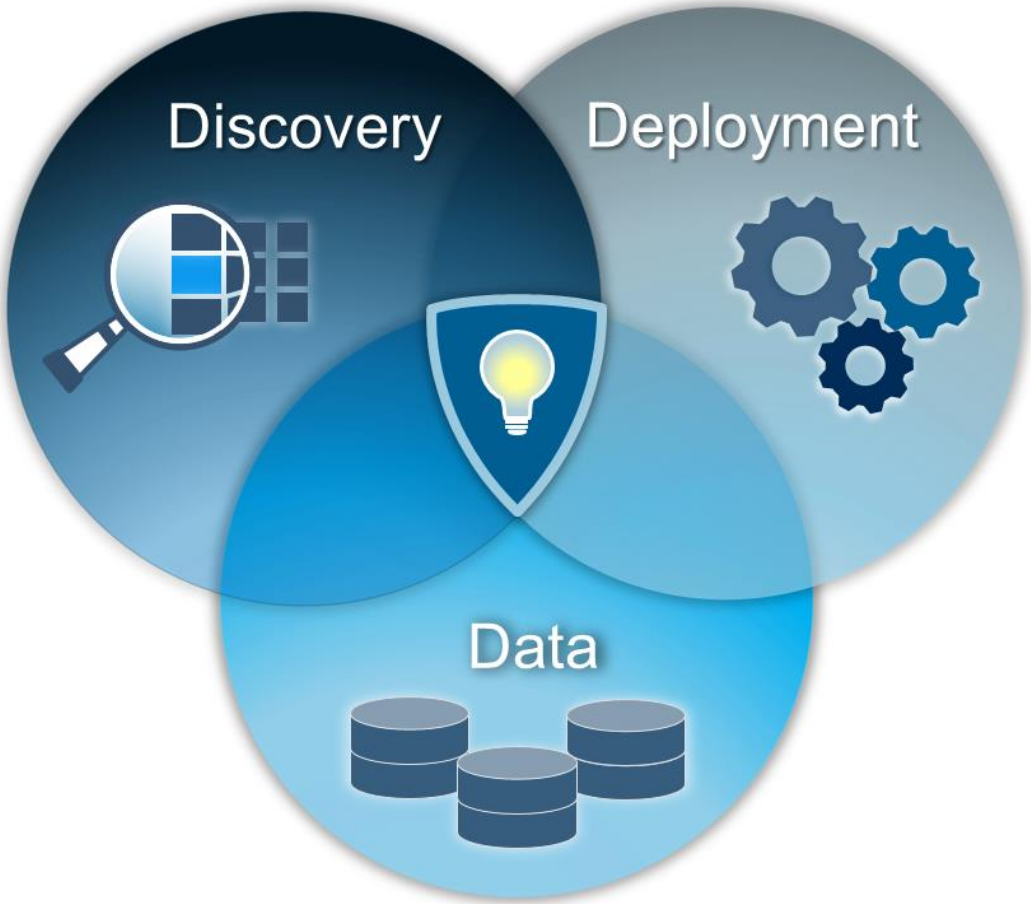
Source: Educating and Equipping Business Analytics Professionals by Jerry L. Oglesby, Ph.D., Director, Global Academic & Certification Programs.
Ponencia con motivo del lanzamiento de la Maestría en Inteligencia Analítica en la Universidad Anáhuac México Norte, 14 de noviembre de 2010.

The Data-driven Organizations



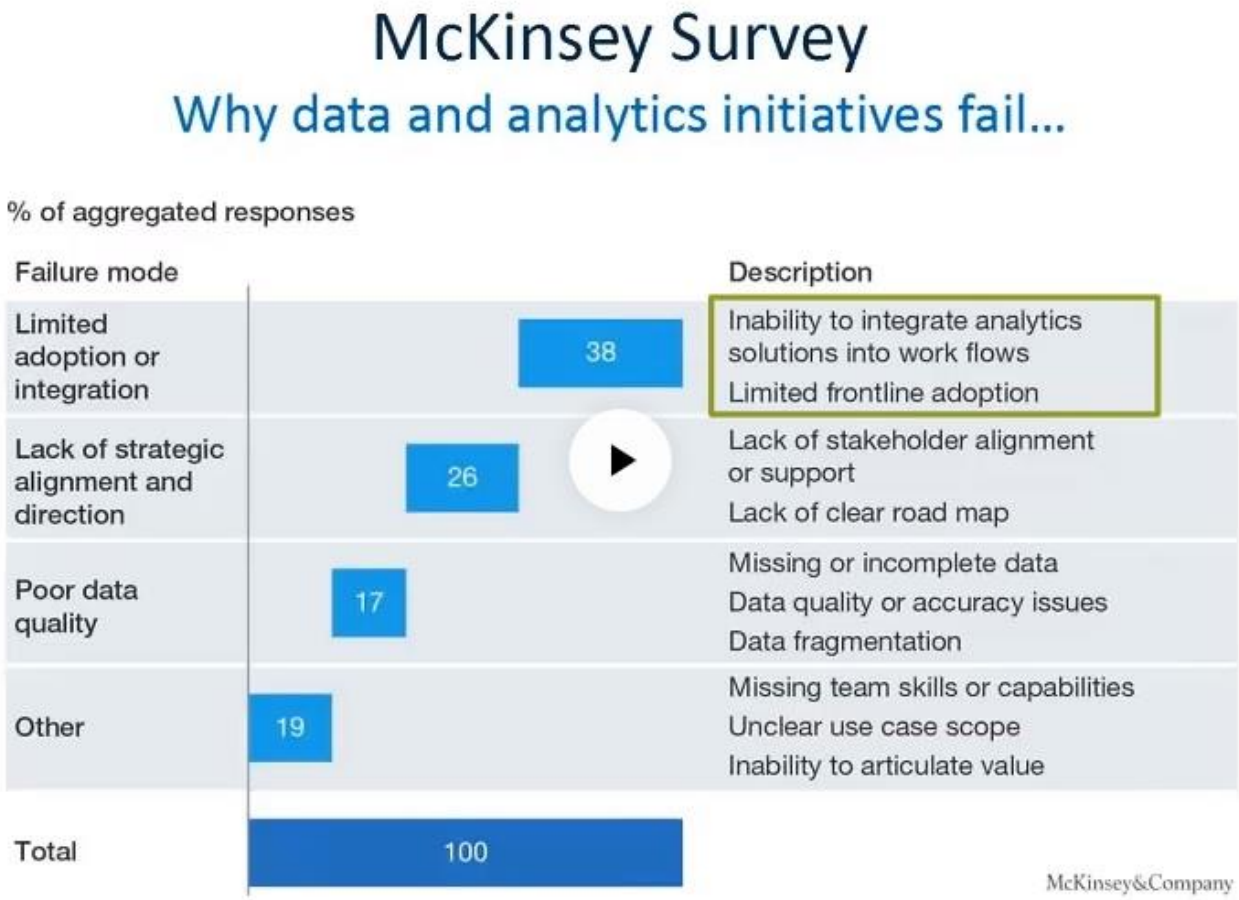
Source: White Paper "Customer Intelligence in the Era of Data-driven Marketing", SAS Institute, Inc. 2010.

The Analytics Life Cycle



Source: White Paper "How Data Science Enthusiasts in Istanbul drive business relevance", SAS Institute, Inc. 2017.

The Analytics Life Cycle

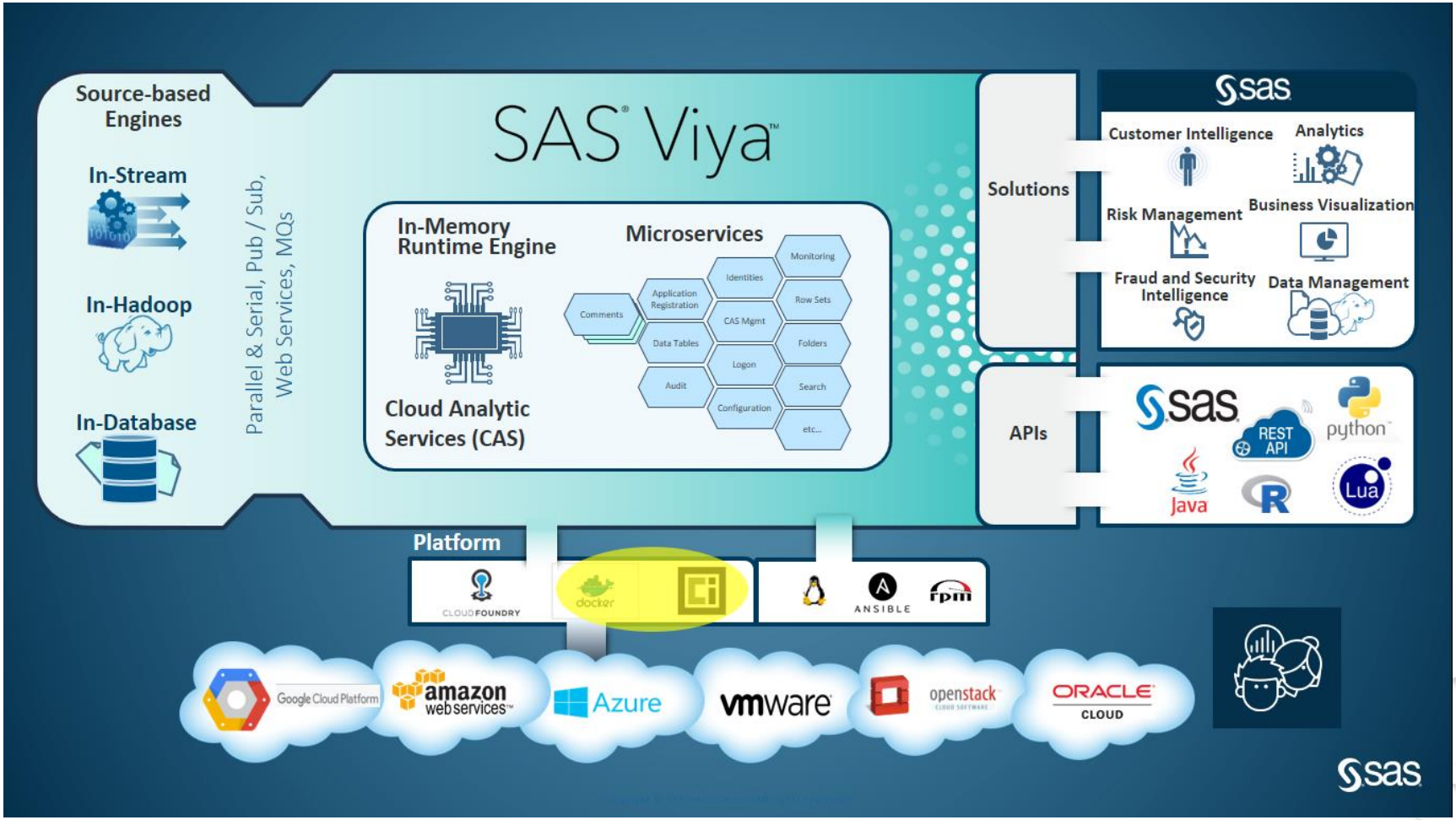


Source: 2016 McKinsey survey of data and analytics leaders at global life insurance and P&C insurance carriers

The Binomial: Technology – Analytics

Source: Gartner (July 2018)

The Binomial: Technology – Analytics



The Binomial: Technology – Analytics

SAS® Viya™ Capabilities- Machine Learning

- In-Memory Data Step
- Transpose
- DS2
- SQL
- Variable Binning
- Variable Cardinality Analysis
- Sampling and Partitioning
- Missing Value Imputation
- Variable Selection
- Image processing

- Assess Supervised Models
- Analytic Store

- Network Analytics
- Decision Trees*
- Random Forest*
- Gradient Boosting*
- Neural Networks*
- Support Vector Machines*
- Factorization Machines*
- Support Vector Data Description*
- Moving window PCA
- Robust PCA
- Compare and Assess models

- Logistic Regression
- Linear Regression
- Generalized Linear Models
- Nonlinear Regression
- Ordinary Least Squares Regression
- Partial Least Squares Regression
- Quantile Regression
- K-means and K-modes Clustering
- Principal Component Analysis
- Text Analytics
- Boolean Rules

*Represents the ML techniques where auto-tuning is supported

The Era of The Data Economy

Classification given by Thomas H. Davenport and The International Institute for Analytics (IIA):

- The Analytics 1.0 – Traditional Analytics.
- The Analytics 2.0 – Big Data.
- The Analytics 3.0 – Data Economy.

Source: White Paper "The Rise of Analytics 3.0. How To Compete in the Data Economy". Thomas H. Davenport, IIA, 2013.

The Era of The Data Economy

The Analytics 1.0 – Traditional Analytics:

- Middle of 1950 to 2000.
- Data sources relatively small and structured.
- Descriptive analytics ang reporting.
- Type of processing: Batch processes.
- Time of processing: Several weeks and months.
- IT – Rudimentary BI
- Analysts in back office.
- Marginal strategy.
- Decisions based of experience and intuition.
- Analytical talent segregated.

Source: White Paper "The Rise of Analytics 3.0. How To Compete in the Data Economy". Thomas H. Davenport, IIA, 2013.

The Era of The Data Economy

The Analytics 2.0 – Big Data:

- Early 2000 to today.
- Emerge complex, large, unstructured, multi data sources, explosion of sensor data.
- Visual descriptive analytics and reporting. Still Small prescriptive analytics.
- Type of processing: The batch processes continue.
- Time of processing: The months are reduced to weeks.
- IT – Hadoop, commodity's servers, in-memory, machine learning, open source…"unlimited" compute power.
- Analysts in from office – Data scientists.
- Data-driven strategy – Data based products and services.

Source: White Paper "The Rise of Analytics 3.0. How To Compete in the Data Economy". Thomas H. Davenport, IIA, 2013.

The Era of The Data Economy

The Analytics 3.0 – Data Economy:

- Today and in the future.
- Many external data sources emerge, processes embedded in the data, processing at the edge..
- Visual descriptive analytics and reporting automated. Prescriptive analytics grow.
- Type of processing: The self-service analytics.
- Time of processing: The weeks are reduced to hours.
- IT – MPP on the cloud, less-schema data, Apps, mobiles.
- Business analysts become citizen data scientist.
- Data-centric business strategy. Analytics embedded in operational and decision processes.

Source: White Paper "The Rise of Analytics 3.0. How To Compete in the Data Economy". Thomas H. Davenport, IIA, 2013.

The University in the Analytics Marathon

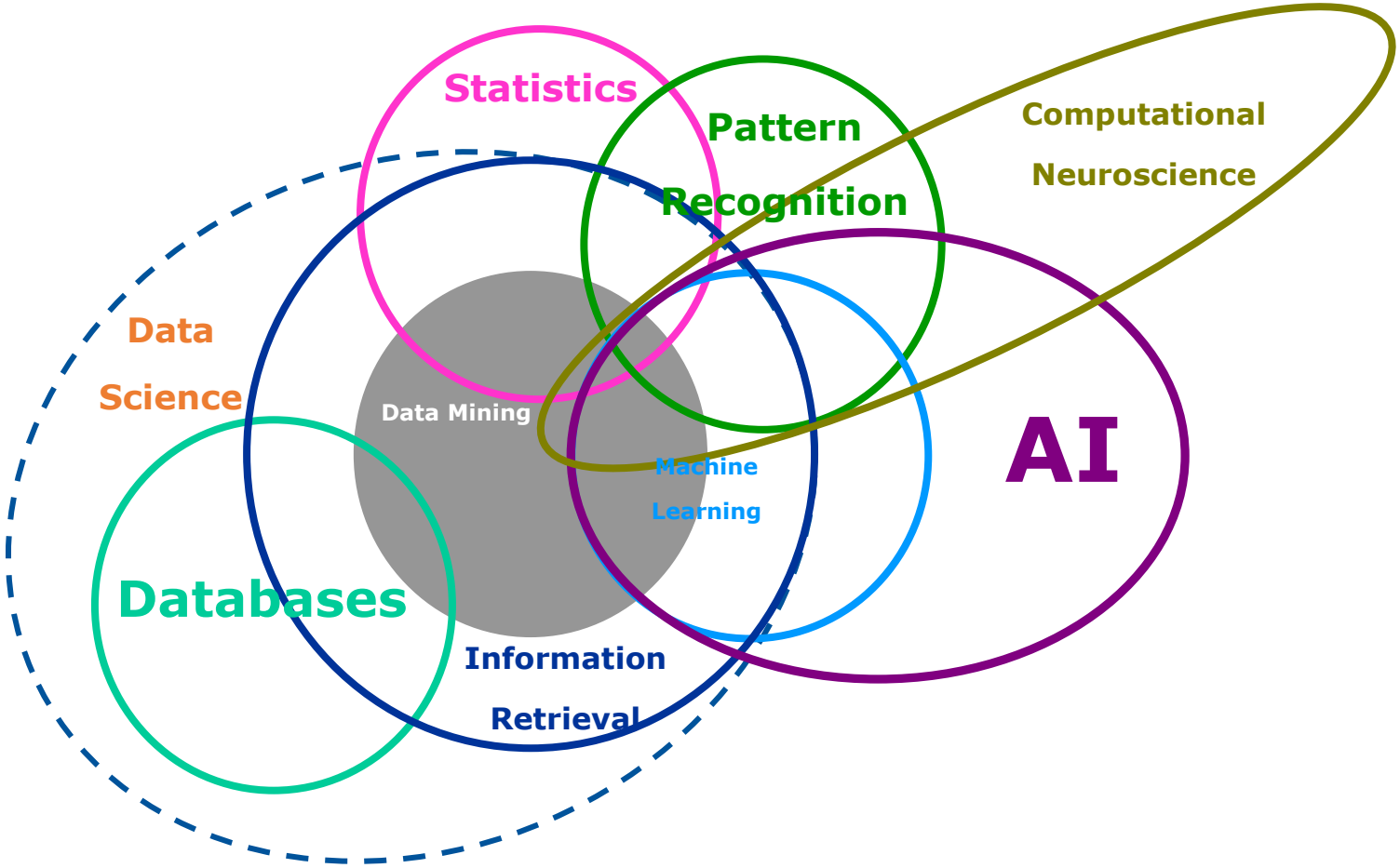
General profile of the modern analysts:

- Basic understanding of the statistical and econometric techniques underlying analytics.
- Strong foundation in tools to manage data and report results.
- Ability to employ advanced applications analytics suites such as SAS Platform.
- Understanding of relational and non-relational databases and the SQL and NoSQL ways data manipulation.
- Familiarity with different operating systems, e.g. UNIX, LINUX, Mainframe, Windows, etc.
- Ability to present findings to a non-technical audience in a clear and concise manner.

Source: Educating and Equipping Business Analytics Professionals by Jerry L. Oglesby, Ph.D., Director, Global Academic & Certification Programs.
Ponencia con motivo del lanzamiento de la Maestría en Inteligencia Analítica en la Universidad Anáhuac México Norte, 14 de noviembre de 2010.

The University in the Analytics Marathon

Data Scientists Profile:



Source: White Paper "Machine Learning. Principles and Practices", SAS Institute, Inc.

The University in the Analytics Marathon

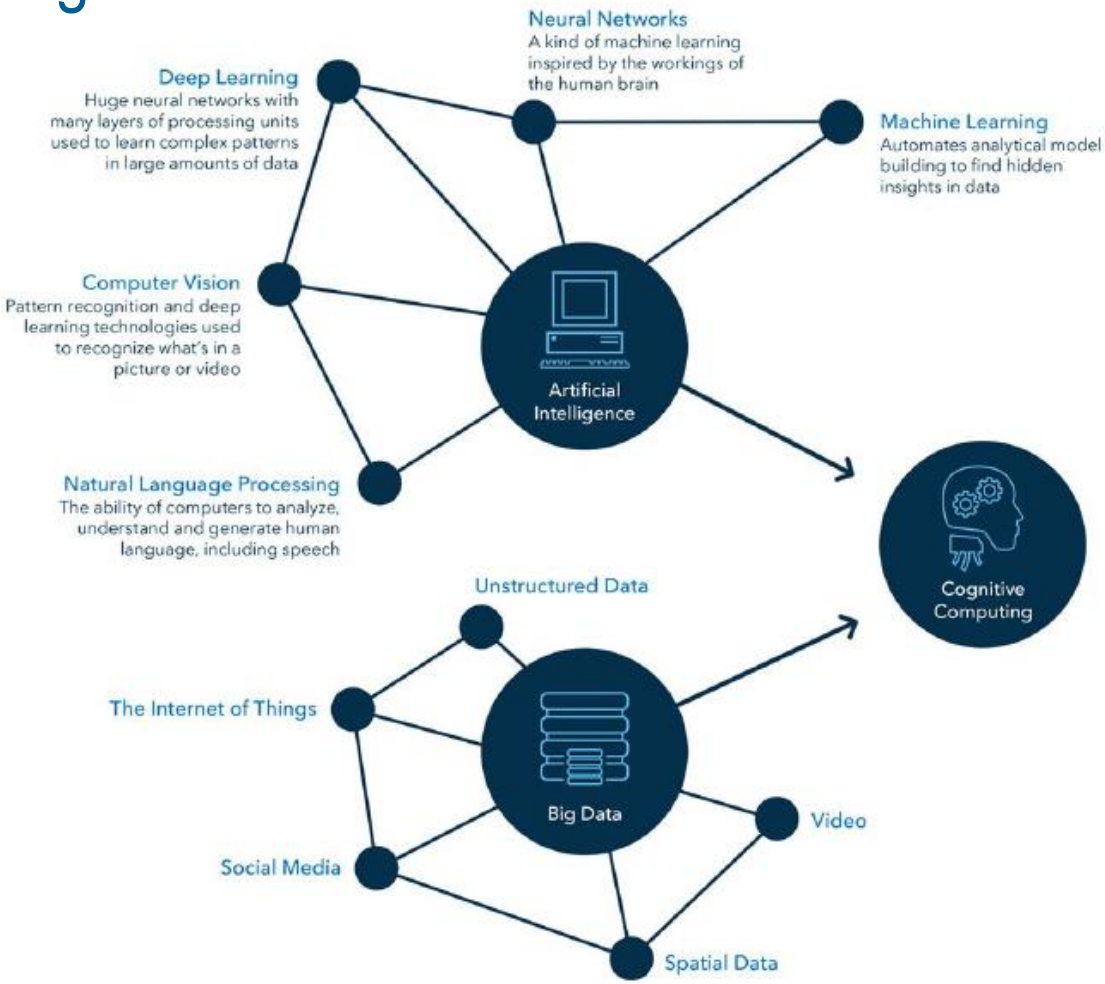
Citizen Data Scientists Characteristics:

- Democratizing analytics for analytical minds in everywhere.
- They're often tired of looking at the same old reports.
- They want to get their hands on all the data themselves and find new ways to get answers.
- They're willing to learn new methods and use new tools.
- They often think, "I don't want to ask a statistician. I want to try it myself.
- How could I get at the answer?
- Coined by Gartner, the analyst firm defines a citizen data scientist as "**a person who creates or generates models that leverage predictive or prescriptive analytics but whose primary job function is outside of the field of statistics and analytics**".

Source: White Paper "How to find and equip the citizen data scientist in your midst". Bernard Blais, SAS Institute, Inc.

The University in the Analytics Marathon

Cognitive Engineer Profile:



Source: White Paper "Becoming Cognitive". W. Thompson, H. Li, A. Bolen , SAS Institute, Inc.

The University in the Analytics Marathon

Academic Programs Characteristics:

- **Flexible** (Face-to-face, e-learning, etc.).
- **Elastic** (Divided into two parts: the base and an update).
- **Resilience** (Resist disruptive events of technology without dying).
- **Open** (To the points of view of the gurus and visionaries).
- **Generalist Approach** (Capable of translating complex analysis into practical business solutions).

Source: White Paper "How to find and equip the citizen data scientist in your midst". Bernard Blais, SAS Institute, Inc.

Summary

- Organizations are eager to hire qualified business analysts.
- Past models of education are ineffective because they do not provide the diverse skill set the modern analyst requires.
- In addition to statistics, modern analytical education should provide students with a thorough understanding of information technology and business strategy.
- Many universities will require substantial changes to meet these new demands.

"To be an effective team member, the modern business analyst must possess the technical knowledge to gather data, the quantitative abilities to produce the analysis, and the business acumen to deliver insights".

Open Discussion/Questions

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THE POWER TO KNOW.