Data Science & Artificial Intelligence: Jobs Market

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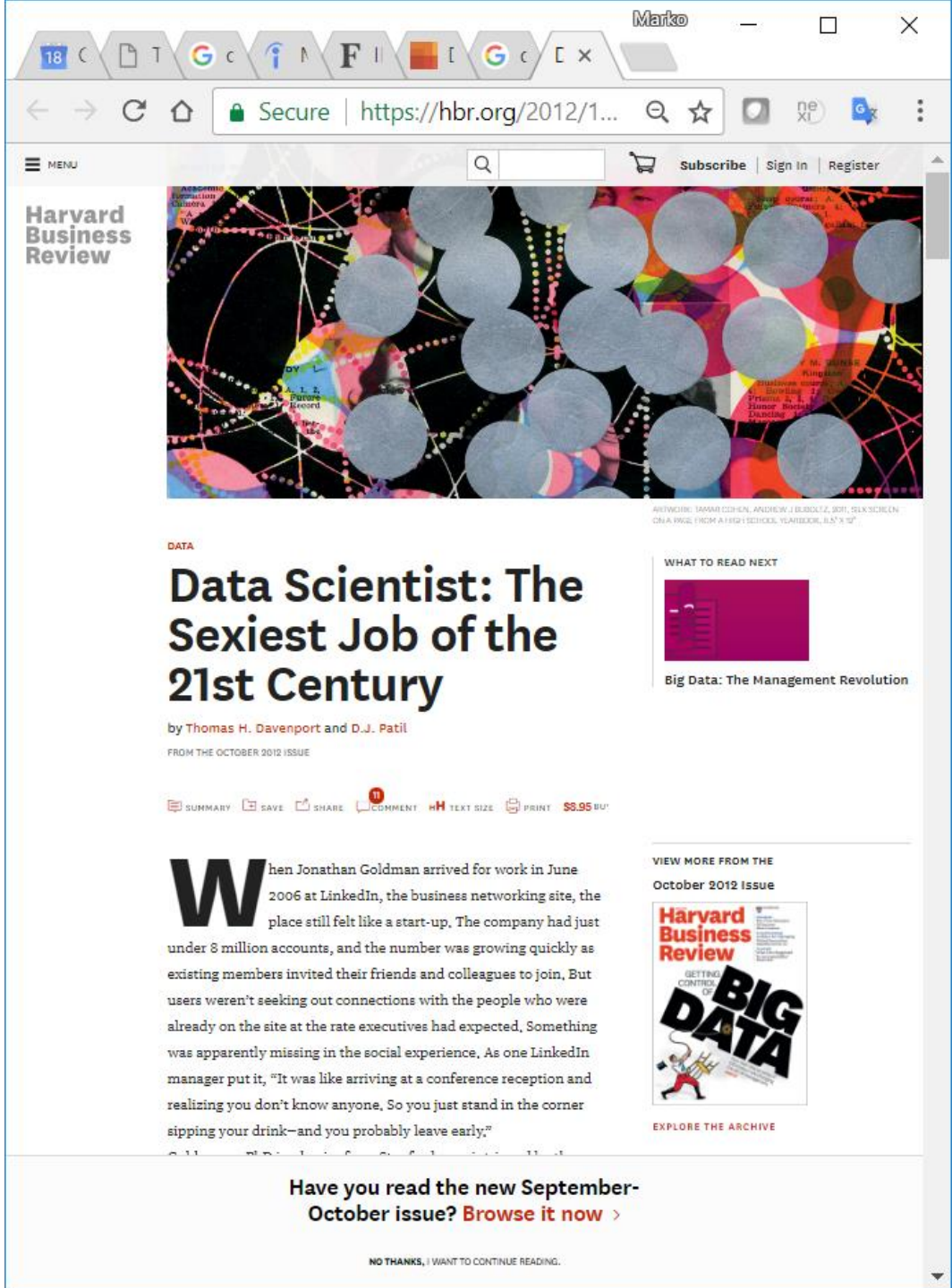
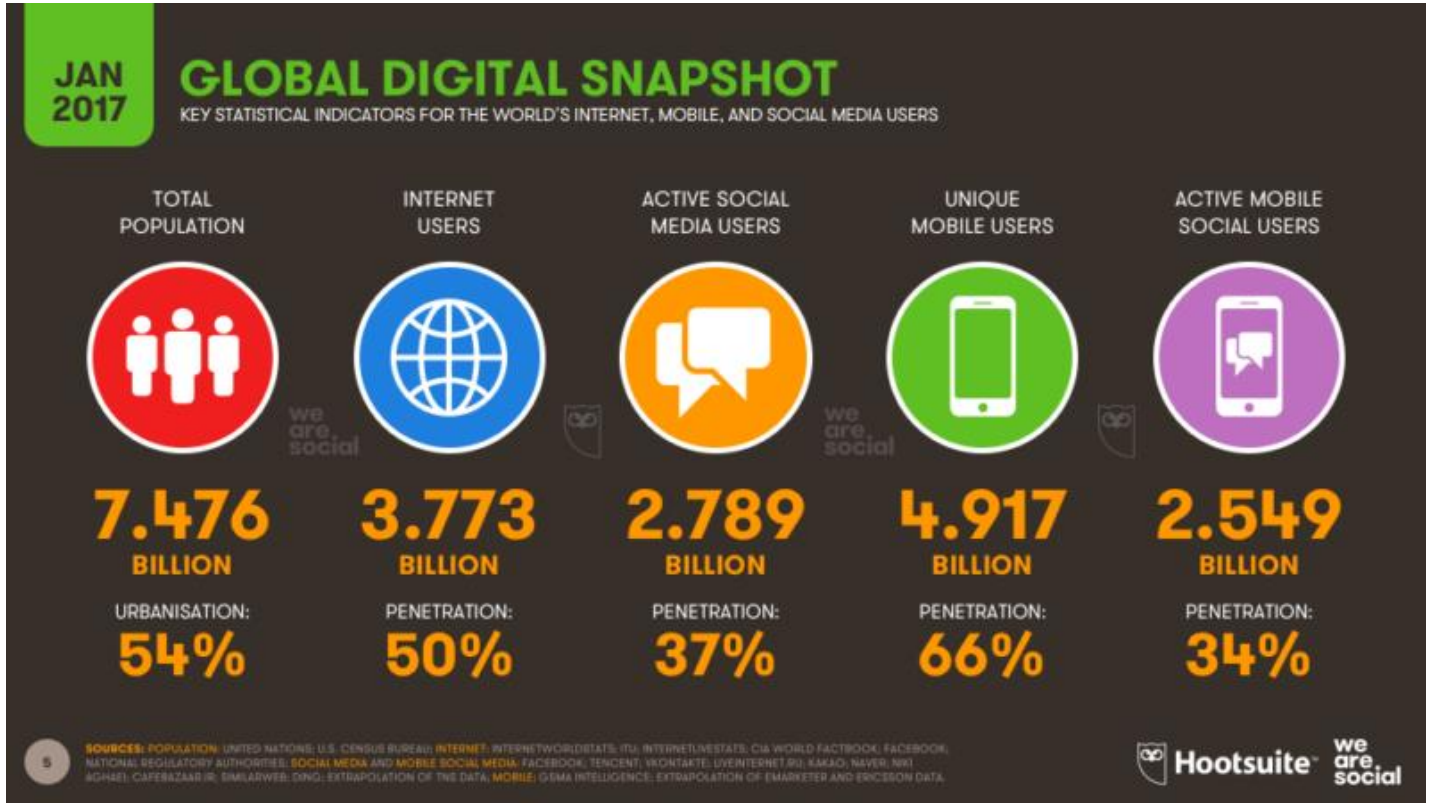
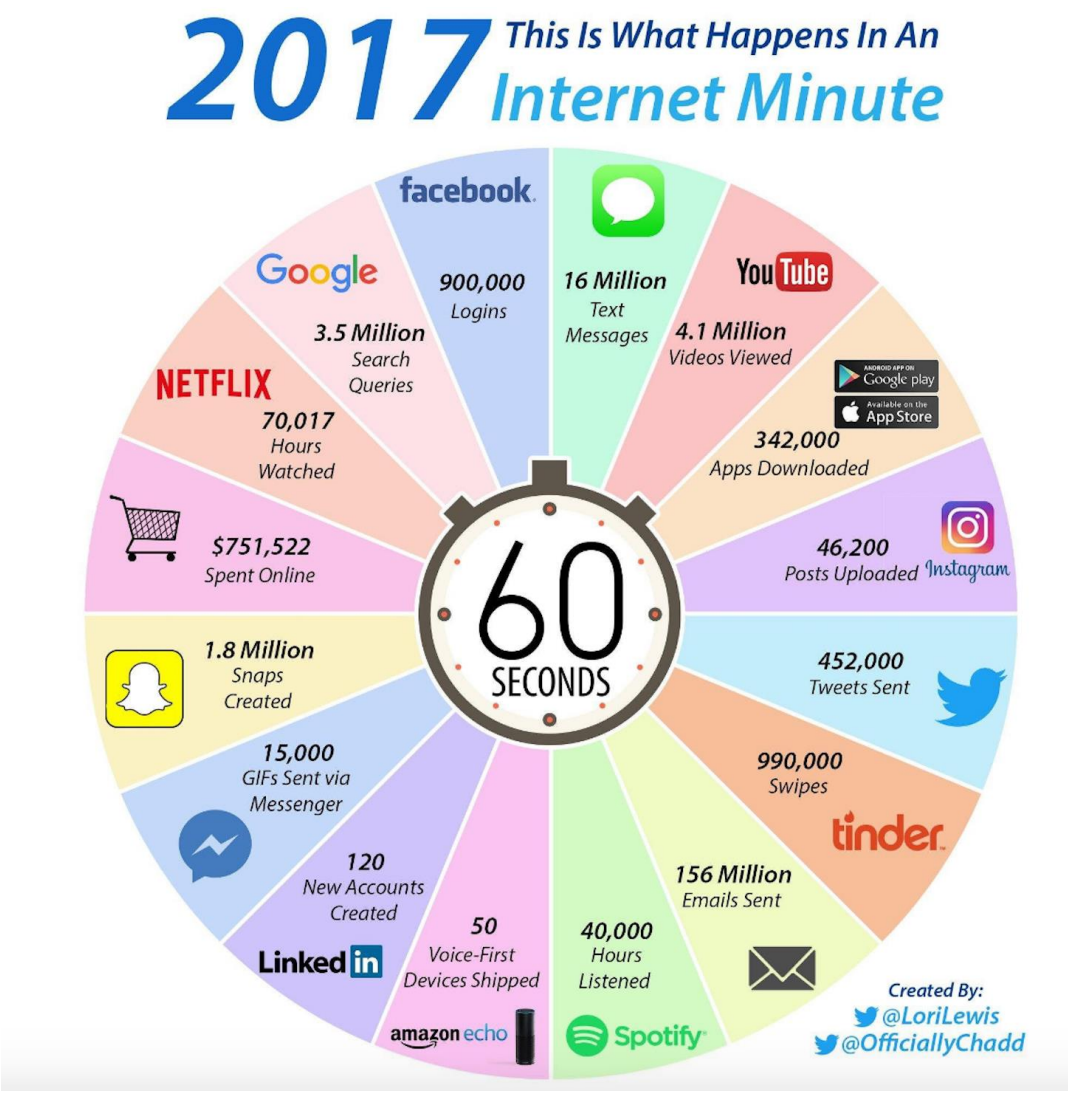
Data Scientist: The Sexiest Job of the 21st Century

- Is it true?
  - …likely
- If yes, why?
  - The world became after year 2000 very “data driven” (bottom-up) vs the past, when it was “model driven” (top down)
  - To support “data driven” world, we need skills and people to operate with data
- Data Science is consequently horizontal area possibly affecting all aspects of life



Where the data comes from?





ARTIFICIAL INTELLIGENCE: QUARTERLY FUNDING

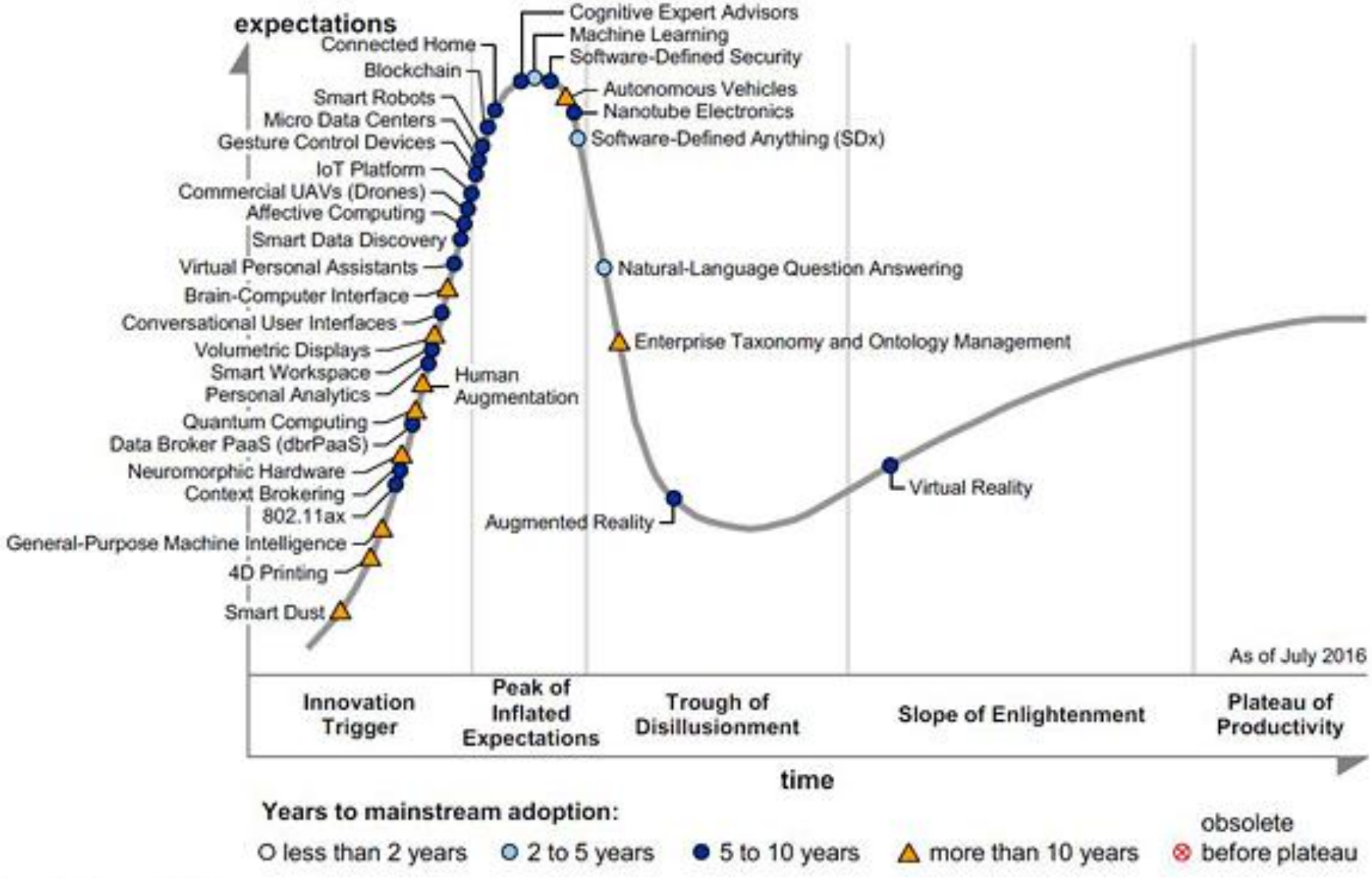
Q1'12-Q1'17 (as of 3/23/2017)

Q1'17 MOST ACTIVE QUARTER FOR AI STARTUPS

Before the close of Q1'17 (as of 3/23/17) AI startups received 245 deals and $1.7B in funding. Nearly 48% of the deals in Q1'17 were in the seed/angel stage, indicating newer companies are continuing to enter the space.

https://www.cbinsights.com/research-artificial-intelligence-trends-report

Hype Cycle for Emerging Technologies, 2016

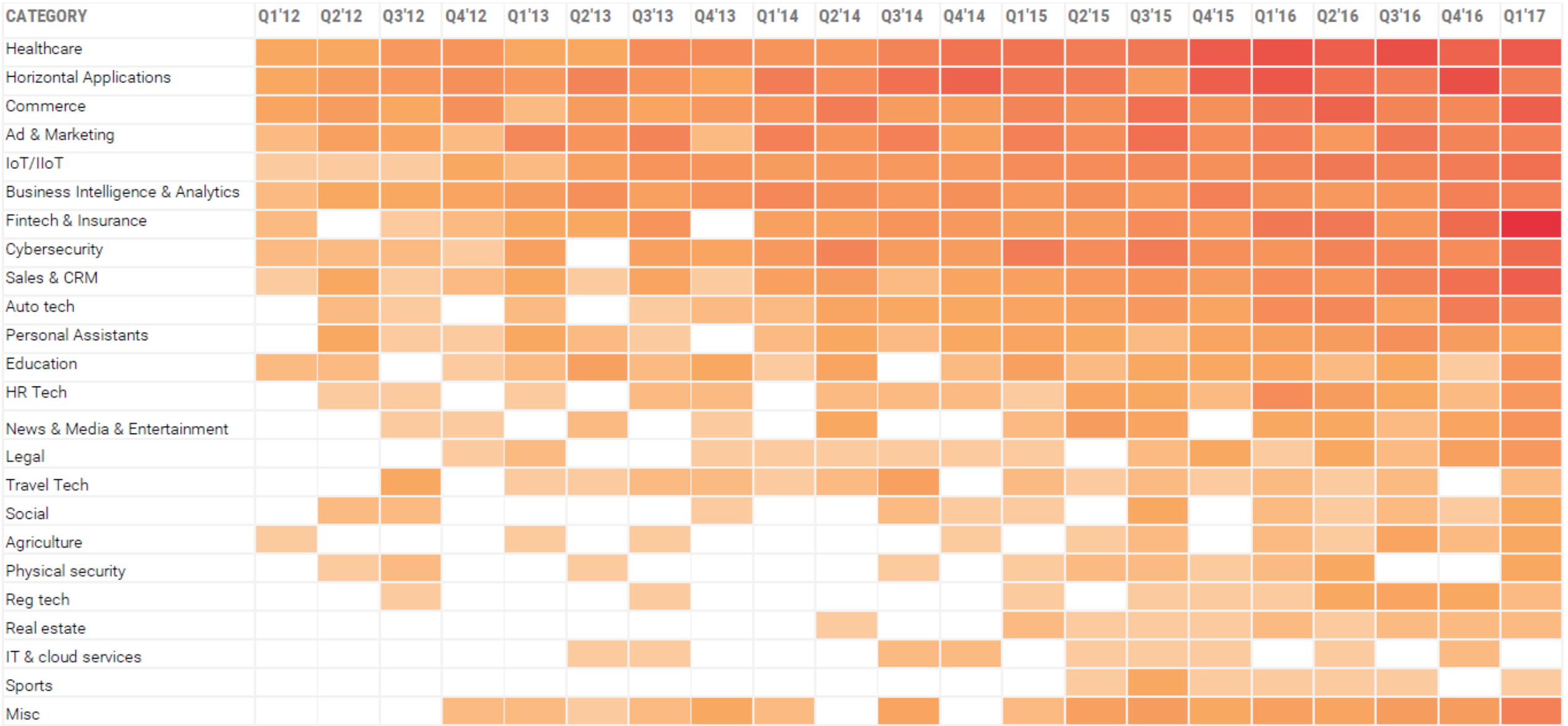


Source: Gartner (July 2016)

http://www.gartner.com/newsroom/id/3412017

AI HEATMAP: DEALS DISTRIBUTION BY CATEGORY

Q1'12-Q1'17 (as of 3/23/17)



https://www.cbinsights.com/research-artificial-intelligence-trends-report

H2020 workprogram for 2018-2020

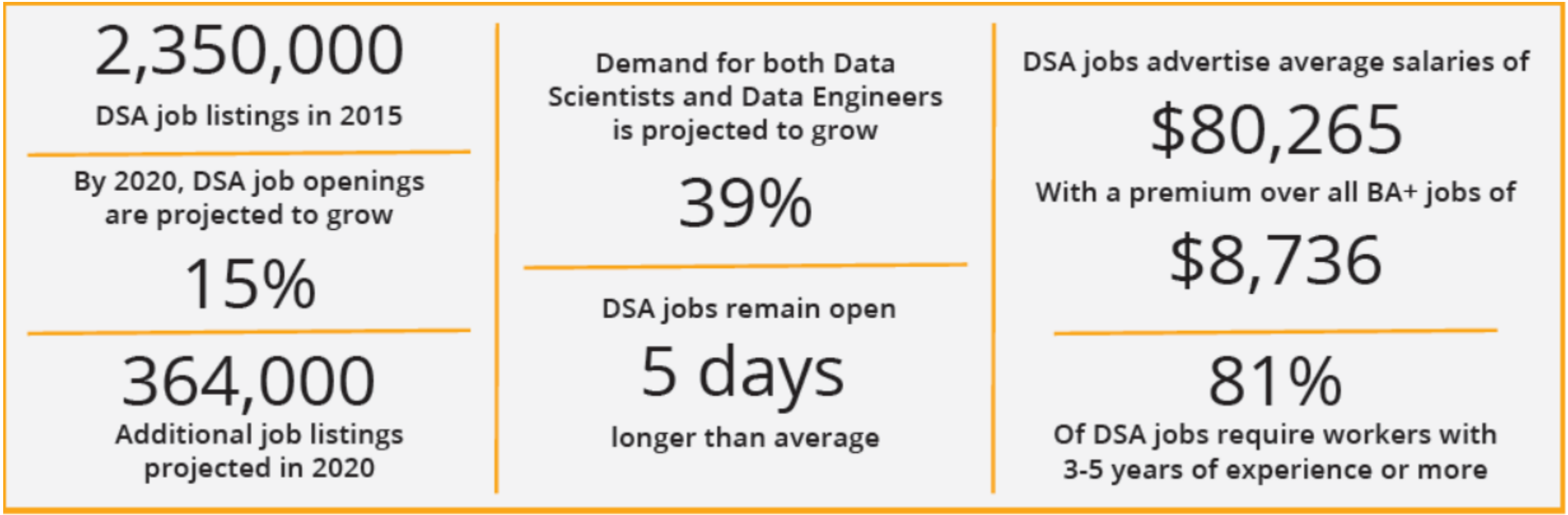
Horizon 2020

Work Programme 2018-2020

Data Science Jobs Overview

Summary from https://www.ibm.com/analytics/us/en/technology/data-science/quant-crunch.html

Data Science & Analytics Landscape



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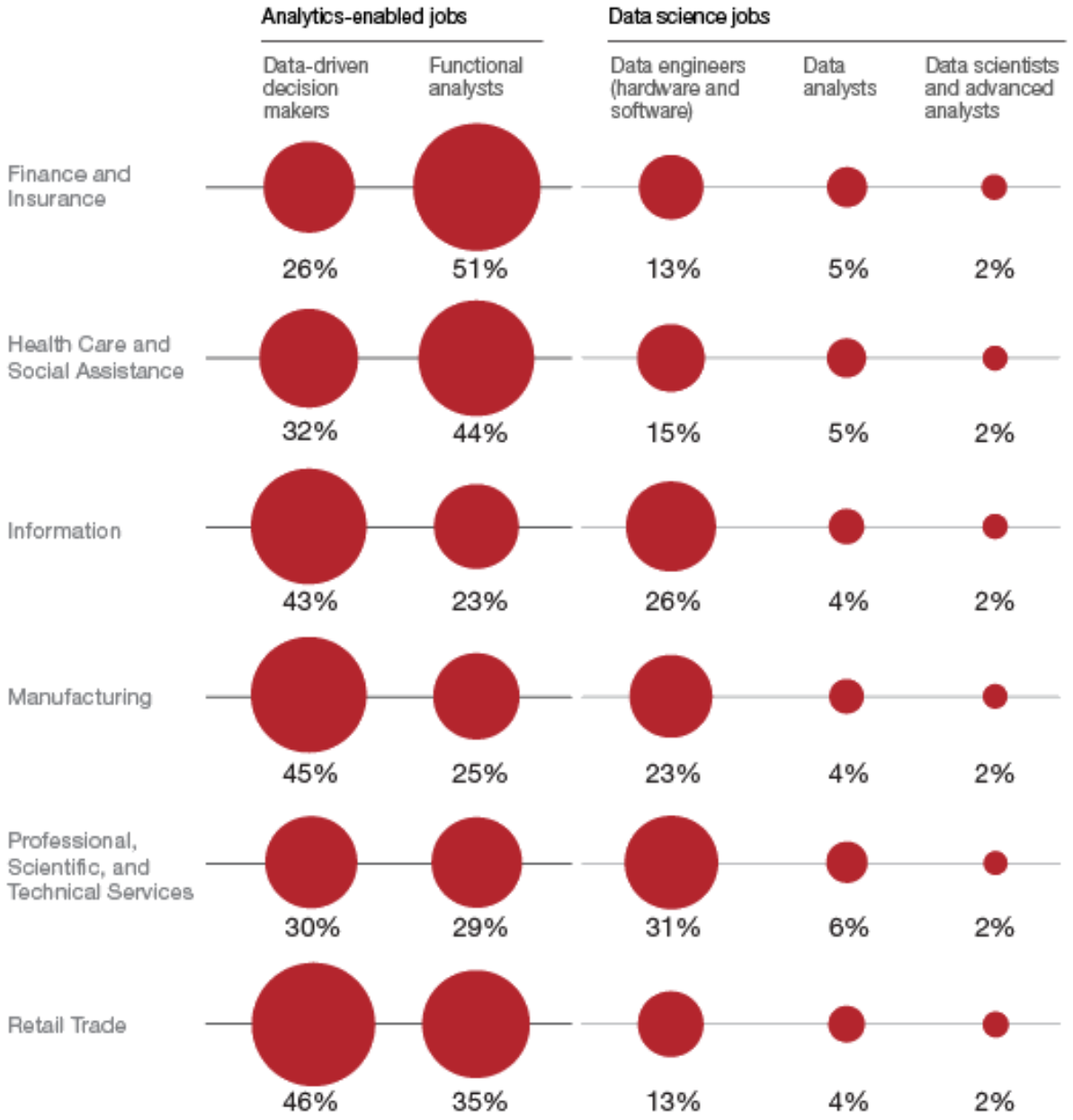
Which data skill sets are needed most in an array of industries?

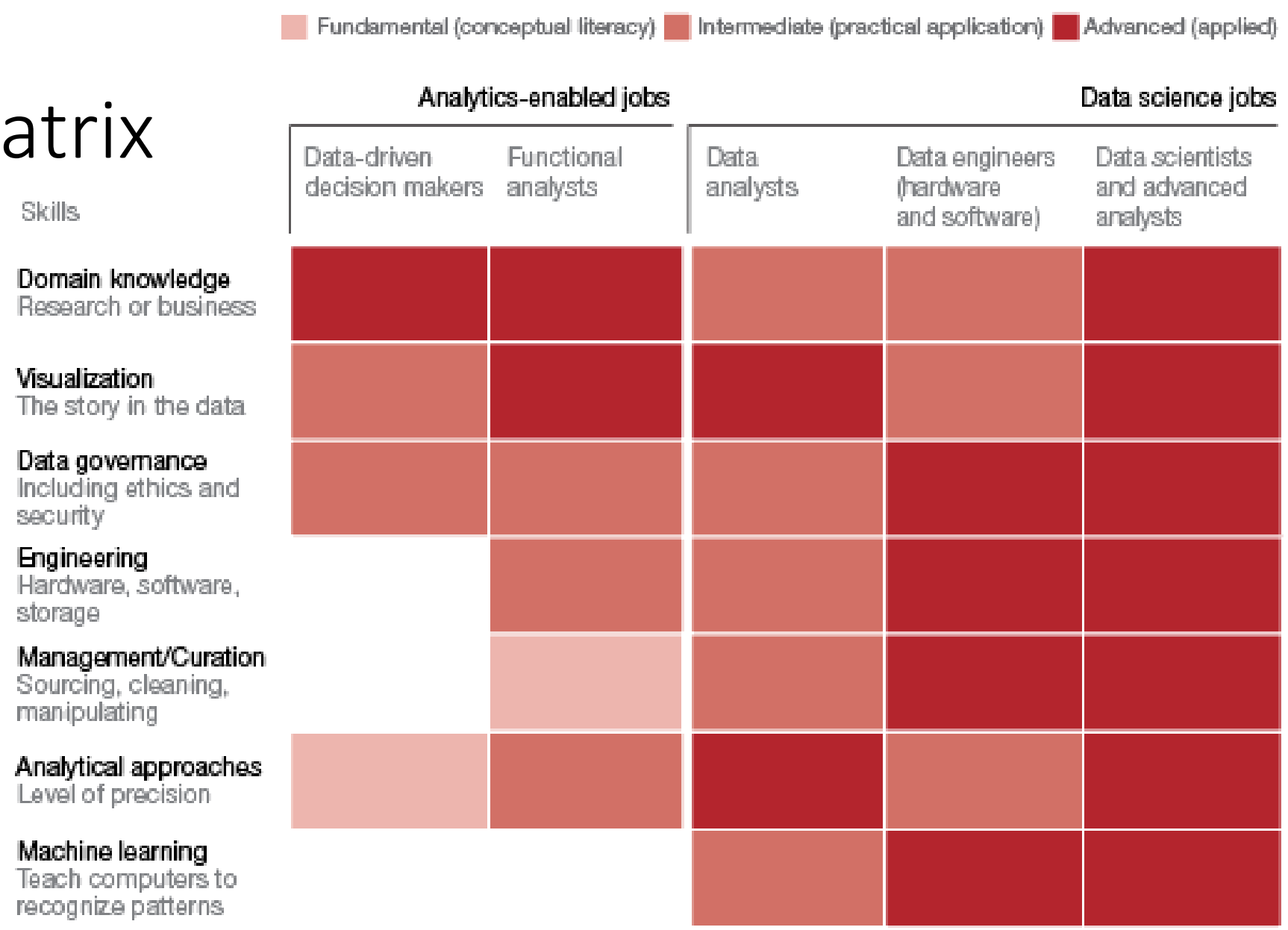
- There are two different markets for data science and analytics jobs:
  - analytics-enabled jobs, and
  - data science jobs
- Each of these markets requires its own strategy:
  - Sourcing from small pools of experienced data scientists and analysts for one, and
  - employee development for the other



Notes: Job category of analytics managers not shown. Totals may not equal 100%.
Source: PwC analysis based on Burning Glass Technologies data, January 2017.
Number of postings: Finance and Insurance (535,683); Healthcare and Social Assistance (100,900); Information (690,833); Manufacturing (237,484); Professional, Scientific, and Technical Services (511,947); Retail Trade (101,711).

https://www.pwc.com/us/en/publications/data-science-and-analytics.html

DSA Skills matrix



Source: PwC analysis based on Burning Glass Technologies data, January 2017.

https://www.pwc.com/us/en/publications/data-science-and-analytics.html

Data Science Job Categories

Analytical Rigor

DSA Framework Category	Functional Role	Sample Occupations
Data Scientists & Advanced Analytics	Create sophisticated analytical models used to build new datasets and derive new insights from data	Data Scientist Economist
Data Analysts	Leverage data analysis and modeling techniques to solve problems and glean insight across functional domains	Data Analysts Business Intelligence Analyst
Data Systems Developers	Design, build and maintain and organization's data and analytical infrastructure	Systems Analyst Database Administrator
Analytics Managers	Oversee analytical operations and communicate insights to executives	Chief Analytics Officer Marketing Analystics Manager
Functional Analysts	Utilize data and analytical models to inform specific functions and business decisions	Business Analyst Financial Analyst
Data-Driven Decision Makers	Leverage data to inform strategic and operational decisions	IT Project Manager Marketing Manager

https://www.ibm.com/analytics/us/en/technology/data-science/quant-crunch.html

DSA Jobs Demand Statistics

DSA Framework Category	Number of Postings in 2015	Projected 5-Year Growth	Estimated Postings for 2020	Average Time to Fill (Days)	Average Annual Salary
All	2,352,681	15%	2,716,425	45	$80,265
Data-Driven Decision Makers	812,099	14%	922,428	48	$91,467
Functional Analysts	770,441	17%	901,743	40	$69,162
Data Systems Developers	558,326	15%	641,635	50	$78,553
Data Analysts	124,325	16%	143,926	38	$69,949
Data Scientists & Advanced Analysts	48,347	28%	61,799	46	$94,576
Analytics Managers	39,143	15%	44,894	43	$105,909

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Top Analytical Skills Within the DSA Landscape

Skill Name	Total Postings in 2015
SQL	338,555
Data Analysis	166,285
Financial Analysis	155,331
Data Management	113,807
Mathematics	107,297
Data Warehousing	97,797
SQL Server	93,630
Database Administration	92,256
Business Intelligence	88,603
Extraction, Transformation, and Loading (ETL)	82,920

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Key Skills and High-Paying Skills by Occupation

Occupation	Key Skills	High-Paying Skills
Data Scientist	Data Science Machine Learning Python R Apache Hadoop	Pattern Recognition Database Schemas Quantitative Analysis Object-Oriented Analysis and Design Database Administration
Data Engineer	Data Engineering Big Data Apache Hadoop JAVA Python	Spark Programming Oozie Predictive Models Apache Flume PIG
Finance and Risk Analytics Manager	Risk Management Financial Analysis and Planning Forecasting and Financial Modeling Project Management SQL	MATLAB Mergers and Acquisitions Data Warehousing Project Management R

https://www.ibm.com/analytics/us/en/technology/data-science/quant-crunch.html

DSA Demand by Industry

Industry	Industry Job Openings that Fall within the DSA Framework
Finance and Insurance	19%
Professional, Scientific, and Technical Services	18%
Information	17%
Management of Companies and Enterprises	13%
Manufacturing	12%
Utilities	10%
Wholesale Trade	9%
Mining, Quarrying, and Oil and Gas Extraction	9%
Public Administration	7%
Other Services (except Public Administration)	6%

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