

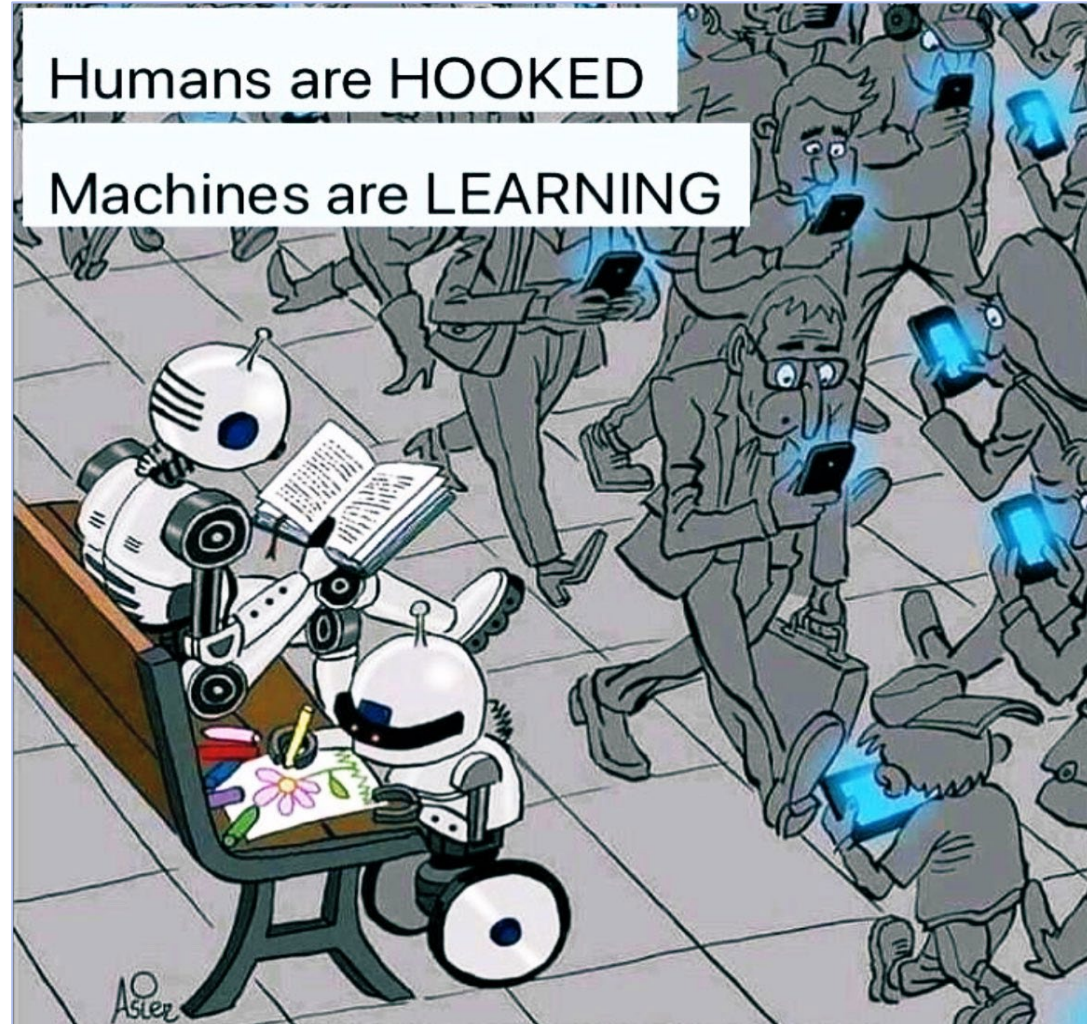


**“There are only two ways to make money in business: One is to bundle; the other is to unbundle”
– Jim Barksdale**

<https://stratechery.com/concept/business-models/bundling-and-unbundling/>

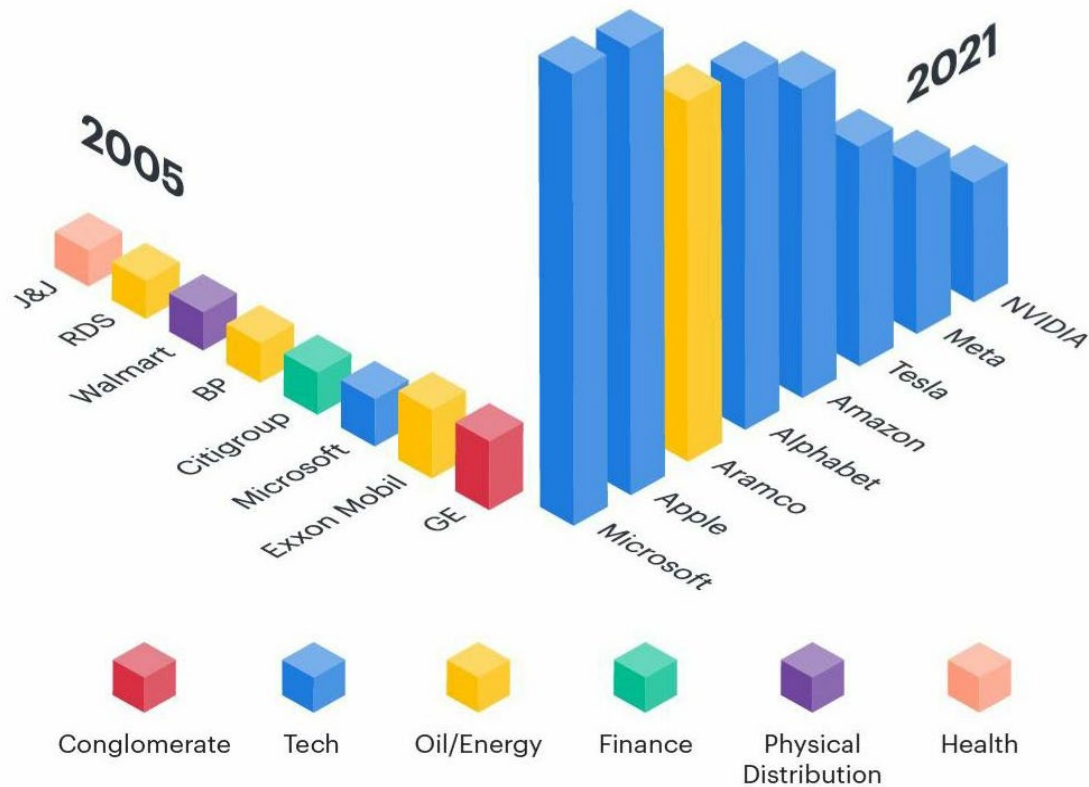
Use of Technology In Investing : A Personal Journey : Lessons & Observations

Kuntal Shah
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November 2021



“When the world changes around you and when it changes against you – what used to be a tail wind is now a head wind – you have to lean into that and figure out what to do because complaining isn’t a strategy.”
 – Jeff Bezos

World’s largest companies by market capitalization



Source : Statista

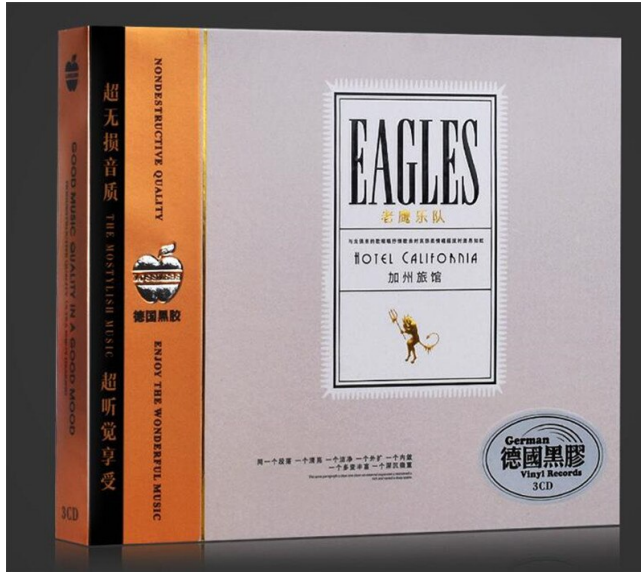
It’s important to tell stories with your data and dashboards!



“...and the customers, shareholders, and employees lived happily ever after!”

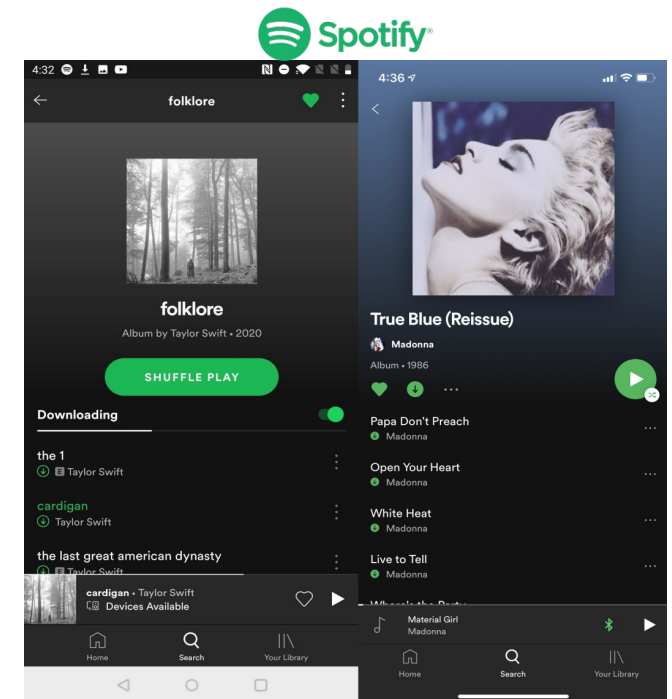
Technology also has Underlying Cycles

Bundle: Unbundle: Bundle: Rinse & Repeat



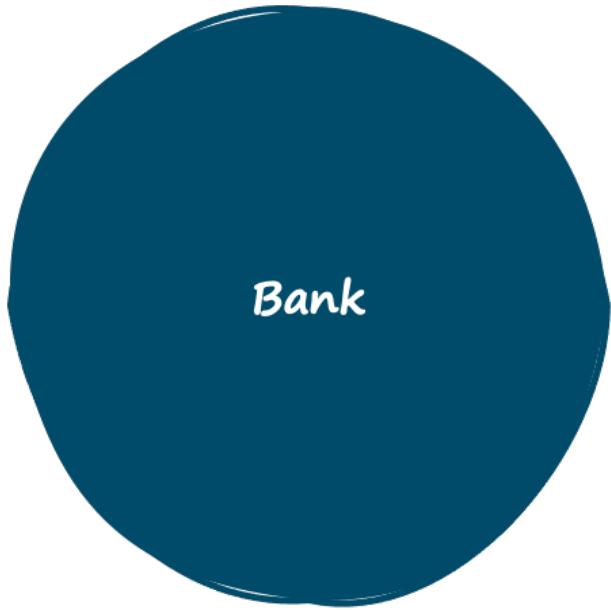
Napster's Features

- Started file sharing
- Easy to search
- FREE music
- Limited to MP3 downloads only

The Napster logo is a stylized blue face with green eyes and a blue mouth, resembling a mask or a stylized head. It has a 'TM' trademark symbol to its right.

Technology as Applied to The Financial Sector is No Different

Bundle: Unbundle: Bundle: Rinse & Repeat





Written by

Bernard Marr

Bernard Marr is a world-renowned futurist, influencer and thought leader in the fields of business and technology, with a passion for using technology for the good of humanity. He is a best-selling author of 20 books, writes a regular column for Forbes and advises and coaches

Press Association: Using Artificial Intelligence And NLG To Automate Local News

23 July 2021

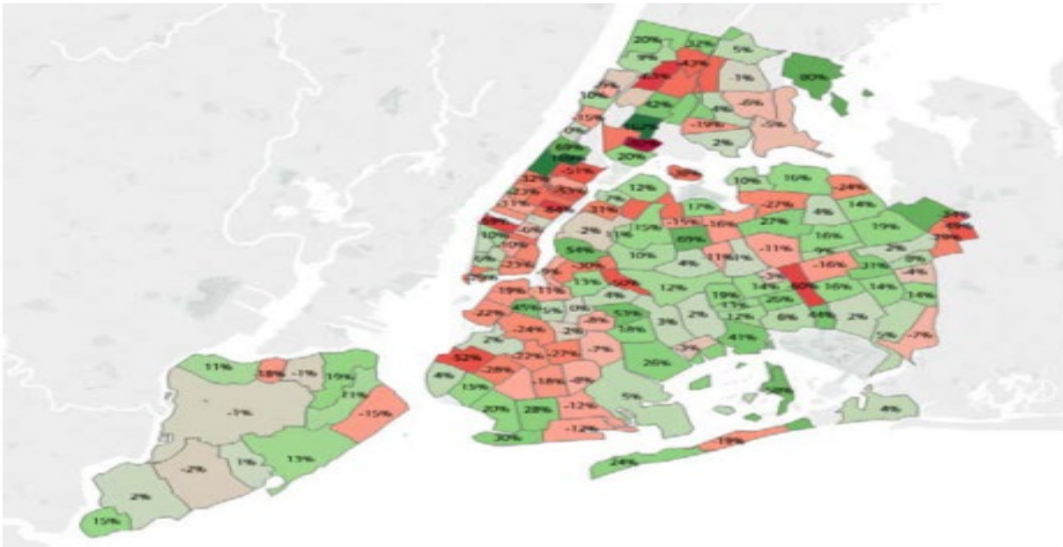
Local news is an industry that has been declining for the past decade, both in the UK and around the world. Shrinking audiences, as readers head online for their news, has led advertisers to allocate their budgets elsewhere. This isn't just a problem for the local news journalists who are losing their jobs; without local news, who will hold local authorities to account and shine a light on those critical local issues?

Surprisingly, robots might be the ones to save local news. Leading UK news agency Press Association (PA) believes **artificial intelligence (AI)** can plug the hole left by redundant journalists and closed newspaper offices. In an exciting new initiative, PA is partnering with news automation specialists Urbs Media to have robots write as many as 30,000 local news



“Machines have the ability to quickly analyze news feeds and tweets, process earnings statements, scrape websites, and trade on these **instantaneously**,” says Marko Kolanovic, JPM’s Head of Quantitative and Derivatives Research.

YoY changes in median home value by zip code in NYC (June 2020 vs. June 2019)



JPM recently launched a “Contract Intelligence” platform that leverages Natural Language Processing, a common ML technique.[10] The solution helps to improve back office functionality and reduce administrative expenses by processing legal documents and extracting essential data. **Manual review of 12,000 commercial credit agreements** would typically occupy approximately **360,000 labor hours**; ML allows for the same review in a **just a few hours**

The Rest of the World Needs to Catch Up

Big Data and AI Strategies

Machine Learning and Alternative Data Approach to Investing

J.P.Morgan May 2017

Alternative Data Primer and 10 Thematic Case Studies for Investors

BofA GLOBAL RESEARCH
BofA SECURITIES

Predictive Analytics

Alternative Data Primer and 10 Thematic Case Studies for Investors

Primer

Alternative: Time to cash-in all this (big) data

Alternative data is an asset class of information that has come into being off the back of the broader data explosion. Traditional financial data relies on information from company filings, investor presentations, media coverage, historical market prices, etc. which are now commoditized and easily accessible on financial databases. Alternative data can come from a plethora of sources, including satellite imagery, GPS tracking, transactional data, sentiment analysis of social media and news feed, etc. They are often less structured and less readily accessible¹. Many tech companies are generating “data exhaust” or orthogonal data that is a by-product of their core activity. They are now monetizing this with the financial services community, which can combine it with other data sources to generate investment ideas. BofA Global Research has made extensive use of this data and in this primer we illustrate how investors can utilize this data through ten thematic use cases.

55% of investor AUM not (yet) using Alt Data

Despite the significant hype, according to our Fund Management Survey (FMS), 55% (\$234bn out of \$434bn) of assets under management (AUM) are not using alt data. And of the investors that have been using alt data, 59% (\$77bn out of \$189bn) of AUM have only been using it for less than two years, with 71% of the investor AUM considered fundamental/discretionary. The FMS data highlights the big opportunity that investors

21 October 2020 Corrected

Predictive Analytics
Global

BofA
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OpenAI's GPT-3 is the First AI that "Understands" Language

GPT-3 translates "legalese" into plain English:

"Upon liquidation of the Company, the Series A shareholders will receive in preference to all other stakeholders an amount in respect of each Series A share equal to one times the Original Issue Price (the "Liquidation Preference"), plus all accrued but unpaid dividends. To the extent that the Company has assets remaining after the distribution of that amount, the Series A shareholders will participate with the holders of Ordinary Shares pro rata to the number of shares held on as converted basis."

"If the startup is wound up, the Series A investors will be paid back at least what they invested and they will also share any leftover assets with ordinary shareholders."

GPT-3 can also:

- Write Emails
- Design web pages
- Write code in a dozen computer languages
- Retrieve historical facts
- Translate languages
- Diagnose diseases
- Converse as a therapist
- And more

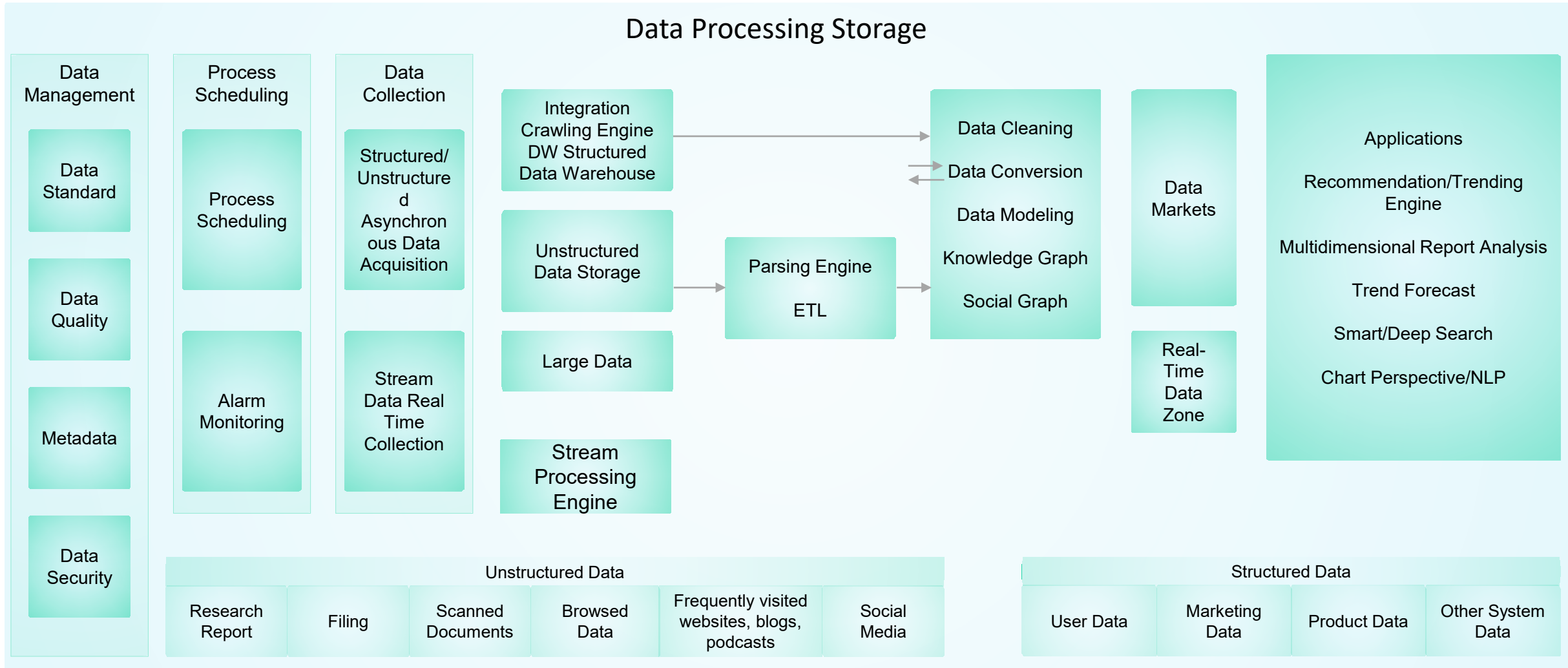
Very few Investors Use Technology Well: The Hidden Edge of an Investor

What's Our Edge?	
Psychological	<ul style="list-style-type: none"> ✓ Discipline ✓ Patience ✓ Avoidance of common biases and misjudgements ✓ Difficult advantage to have, but the most common among good investors (Easier said than done)
Analytical	<ul style="list-style-type: none"> ✓ Draw better or more accurate conclusions from the same data available to everyone else ✓ Most investors think they have this advantage, but it's the most difficult one to have
Informational	<ul style="list-style-type: none"> ✓ Better, or more privileged access to information: <ul style="list-style-type: none"> ▪ Information obtained by scuttlebutt ▪ Being a company insider, or ▪ Illegal use of insider knowledge (Ivan Boesky type)
Time Arbitrage	<ul style="list-style-type: none"> ▪ Time is what cooks a great a business, share price too
Technological	<ul style="list-style-type: none"> ✓ Ability to handle the information overload ✓ Productivity enhancing tools reducing time taken to derive insights, execute & monitor decisions
Inefficient Domain	<ul style="list-style-type: none"> ✓ Investing in inefficient, less liquid markets such as : <ul style="list-style-type: none"> ▪ Corporate restructuring ▪ Mid-cap equities ▪ Special situations ▪ Companies repurposing assets to greater efficiency
Risk Mgmt. (portfolio)	<ul style="list-style-type: none"> ✓ The ability to limit overall portfolio risk through superior stock selection and obsessive focus on earnings quality/asset allocation/hedging etc.
Cost of Capital (portfolio)	<ul style="list-style-type: none"> ▪ Explicit cost of capital: Low-cost debt financing, low expectations from equity investors, or low-cost insurance float (think Berkshire Hathaway) ▪ Implicit cost of capital: Having investors, partners, or shareholders who don't equate risk with volatility. The ability to have a rather permanent, long term capital base
Odds in Your Favour	<ul style="list-style-type: none"> ✓ Asset prices reflect a set of expectations ✓ Investors understand those expectations (Expectations are analogous to the odds—the goal of the process is finding mis-pricings. The single greatest error in the investment business is the failure to distinguish between knowledge of a company's fundamentals and the expectations implied by the price)

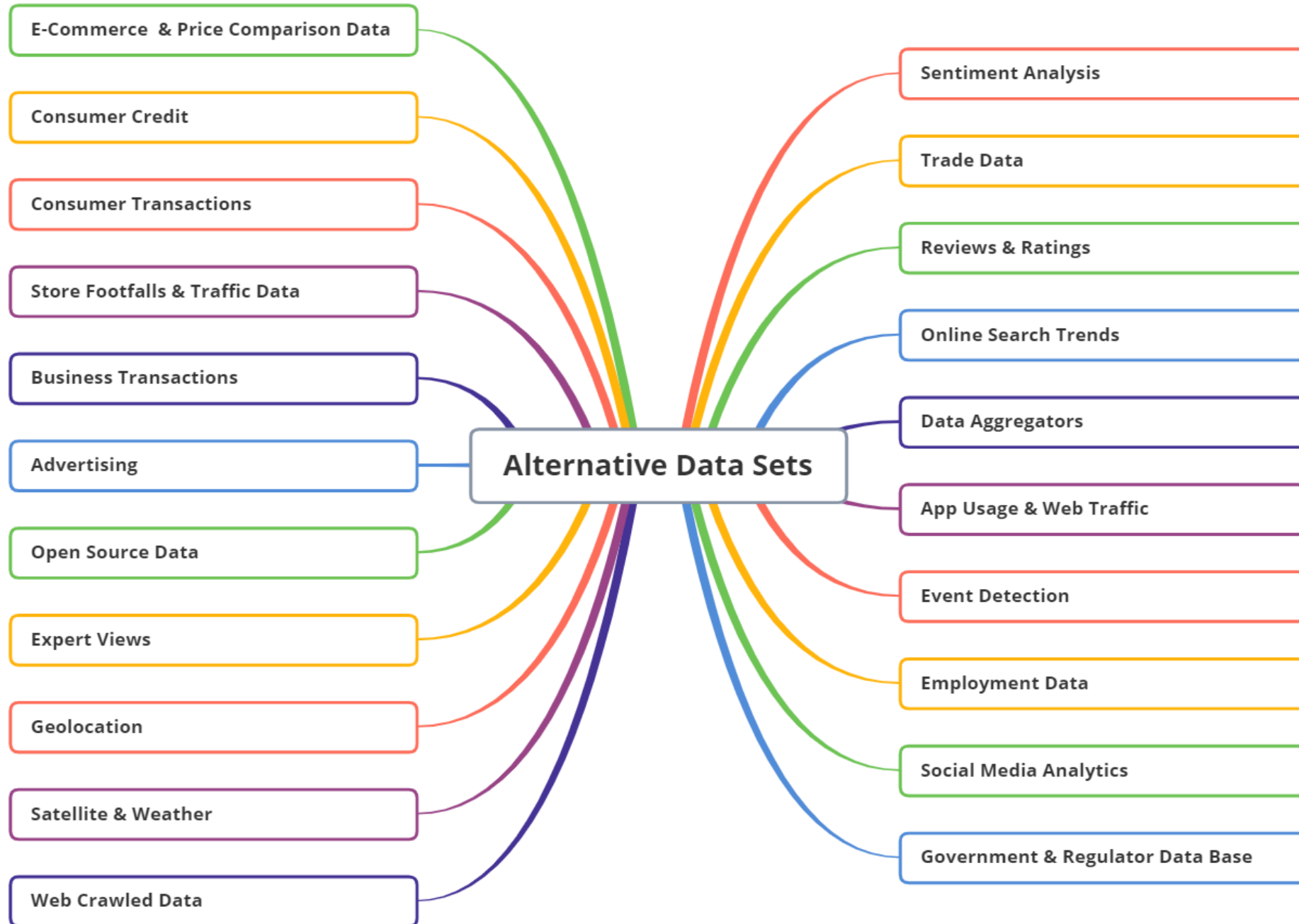
Technological View of Asset Management Workflows

Front Office		Middle Office			Back Office			
Portfolio Optimization	Research & Analysis	Decision Support	Order Mgmt.	Performance Measurement	Trade Entry & mgmt.	Corporate Actions	Funds Admin	Settlement
Construction & Modeling	Maintain Invt. Library	Manage Client Portfolios	Bulking	Calculate Model Performance	Buy, Sell, Switch	Voluntary/Mandatory Events	NAV	Deal Settlement
Horizontal & Mkt. Risk	Distribute Research	Portfolio Groupings	Routing	Calculate Client Portfolio Performance	Contract Notes	Event Diary	Interfaces to Providers	Monitoring & SSI
Invt. Decision	Knowledge mgmt.	Packaged Trades	Allocation	Analyse Model's Attribution	Confirmations	Reconciliation		
Sensitivity Analysis	Collate Research	Manage Bulking of Trades to Mkt.	Execution	Report Performance/ Attribution	Charges & Commissions		Portfolio Accounting	Reporting
	Review End-User Feedback	Manage Tax Efficiency Invt.	Monitoring			Custody	Accounts	Risk Reports
CRM	Conduct Research	Target mgmt. Approach		Compliance	PEP/ISA Admin	Securities Admin	Audit Trails	Statutory Returns
Client Liaison		Create Models	Client Reporting	Pre-Trade	Fees & Income Payments	Off Mkt. Transfers	Cash/Stock Reconciliation	Exception Reports
Product Catalogues		Authorize Invt. Decision Tools	Income Statements	Post-Trade	Cash/Stock Subscription & Withdrawal		Mgmt. Info	Daily Transactions
Opportunities mgmt.		Compliant Rationale for Trades	Tax Statements	Regulatory Reporting	Dealing/ Transfers			
Campaign mgmt./Sales/ Distribution		Portfolio Admin Services	Client Reports		Dividends/Tax Credits	Diary	Static Data Maintenance	Fees
Contact & Client mgmt.		Focused Trades	SOFA	CGT				

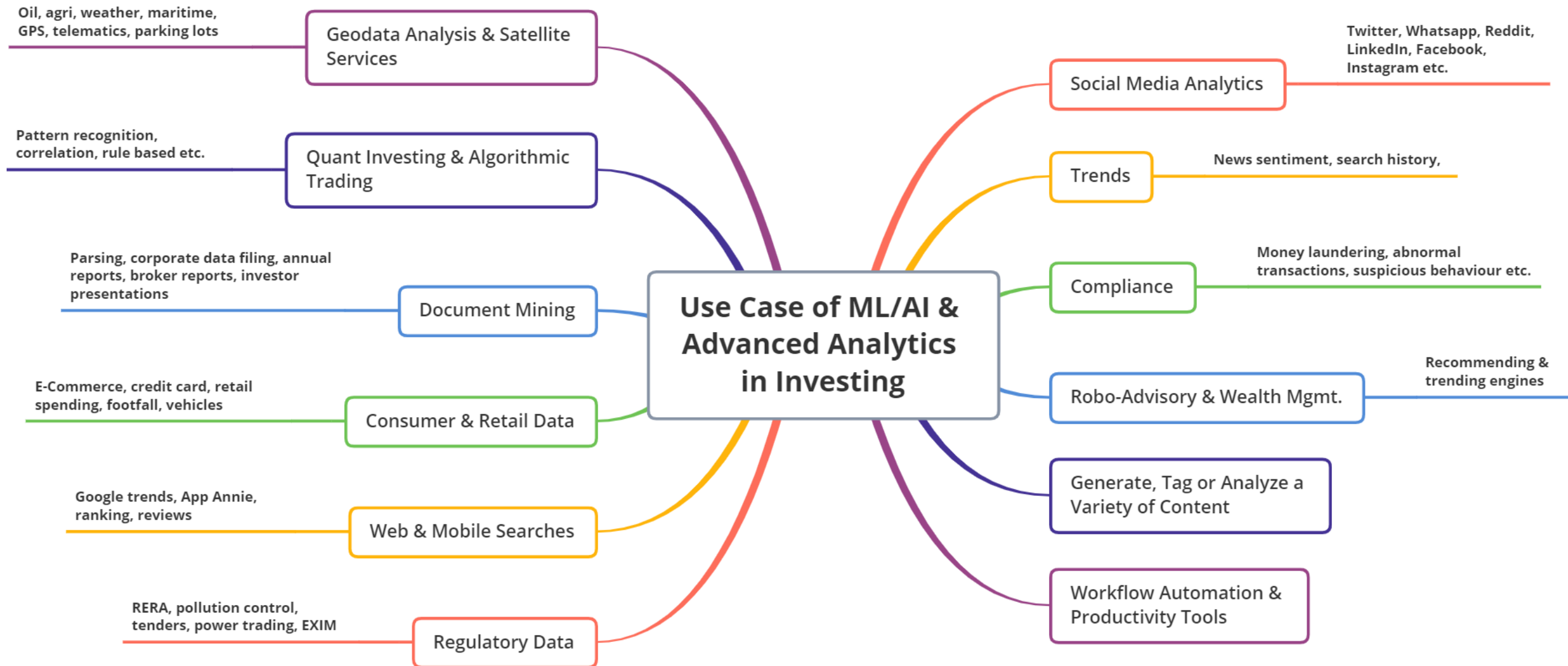
Technology & ML/AI Framework



Technology is Assisting Access to Relevant Alternative Unstructured Data Sets

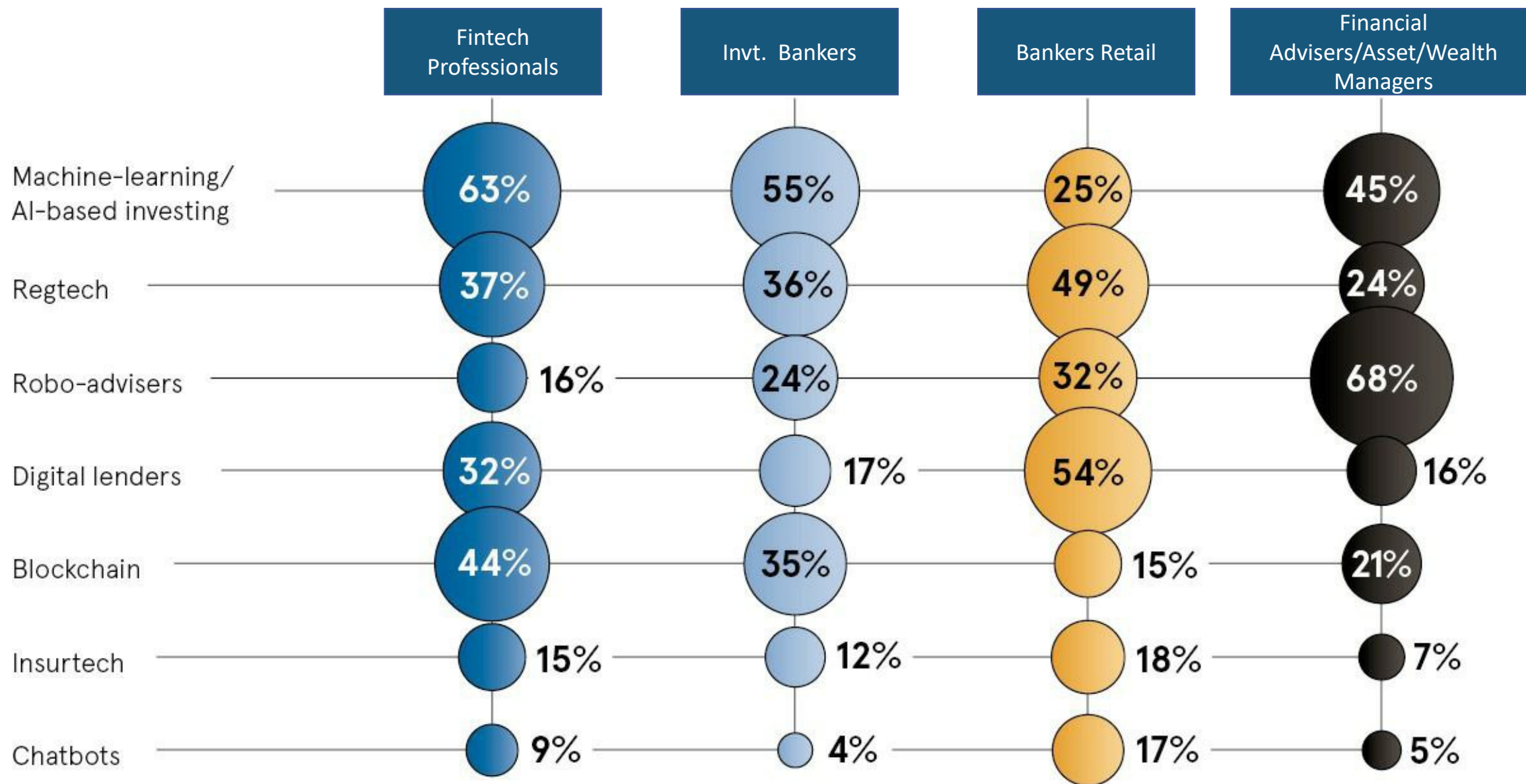


Technology can Help Investors Partially Deal with Information Overload & Automate Workflows



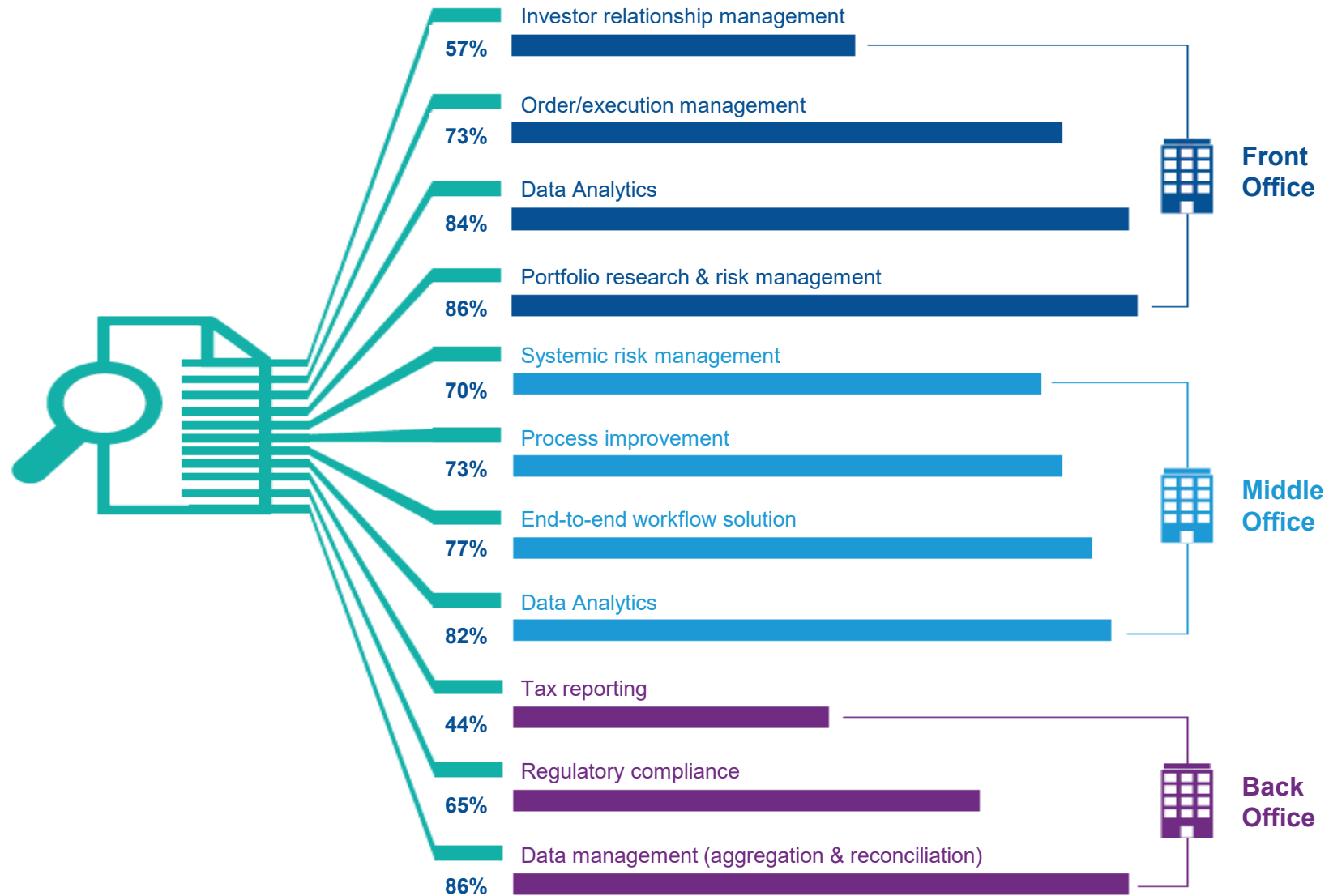
Most Important Technologies Disrupting the Financial World

Percentage of different industries who believe the following are important to their sector



Technology Perspective: IT is Growing Exponentially at Scale

Over the next 5 years, how important will the role of technology be in the following areas?



The Role of Technology in Investment Management is Underrated

- A – Assets
- L – Liabilities
- A – And
- D – Debt
- D – Derivative
- I – Invt.
- N – Network

Portfolio Risk Analysis

- Portfolio Construction/What-if Analysis
- Risk Modeling & Reporting
- P&L Analysis

Risk Management, Control & Oversight

- Executive Oversight
- Comprehensive Risk & Position Reporting Across all Assets
- Full Information Transparency
- Centralized Source of Data

Data Control & Operations

- Security & Broker Data
- Post-trade Compliance
- Trade Confirmation & Notifications
- Corporate Actions Procession

Portfolio Administration

- Performance Attribution
- Reconciliation
- Cash Forecasting
- Interfaces with Accounting Systems

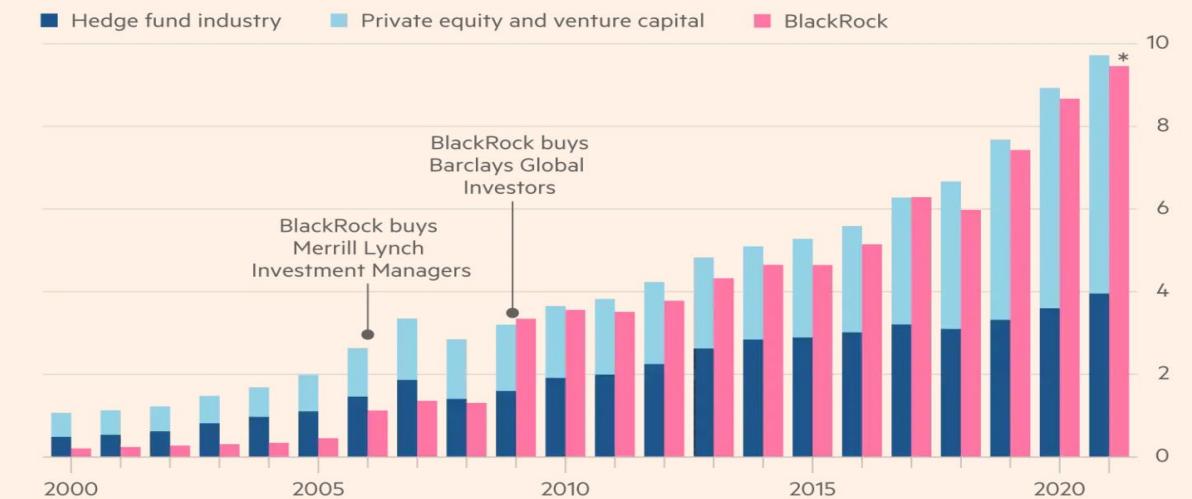
Trade Execution

- Order mgmt.
- Pre-trade Compliance
- Placements
- STP to Brokers



The rise of BlackRock

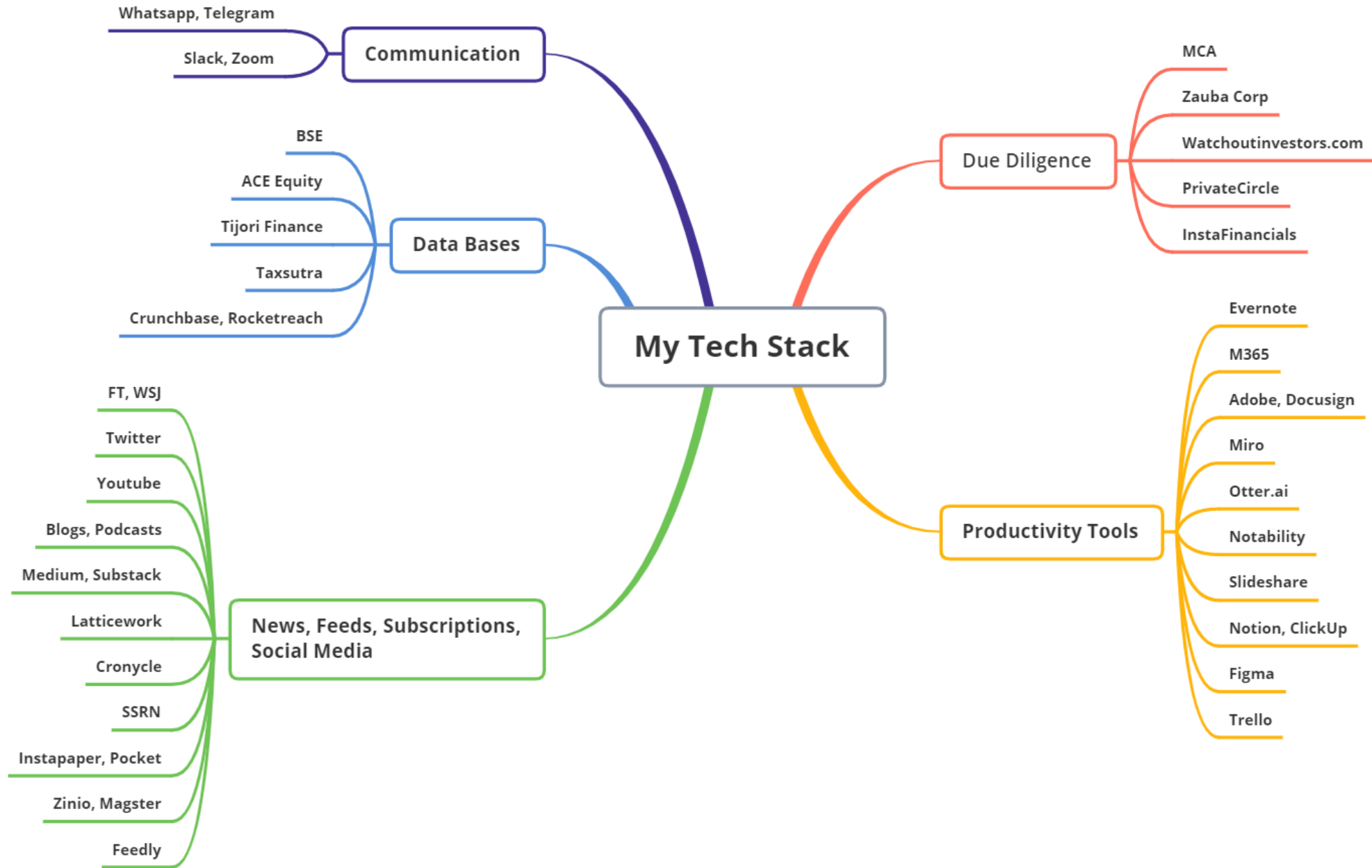
Overall assets under management (\$tn)



Source: BlackRock, HFR, Preqin
© FT

* BlackRock AuM as of end-June 2021

Information: High Value, Volume, Velocity, Variety & Venues



Evolving to Apply Cloud Computing on Information Management Workflows



<https://www.needl.ai/case-study>

Needl unbundles data from various devices & apps & bundles it with cloud processing
Our mission is to retrieve, organize & stitch your data from multiple sources to make it accessible & useful