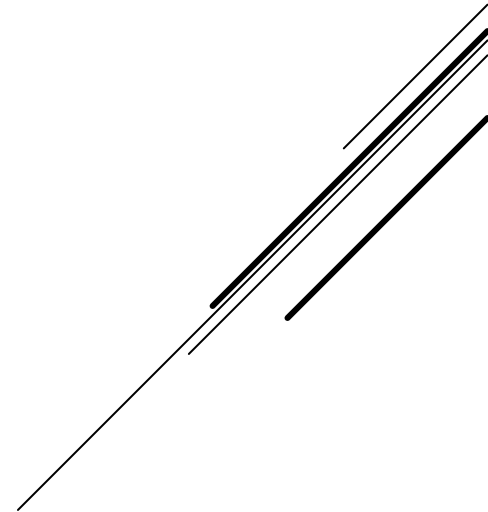


Artificial Intelligence in the Credit Department



Bob Karau CICP
Manager of Client Financial Services
Robins Kaplan LLP

First things first...



The Topic...Reimagine Series



IBM Watson Artificial Intelligence

The Topic...~~Sensationalize~~

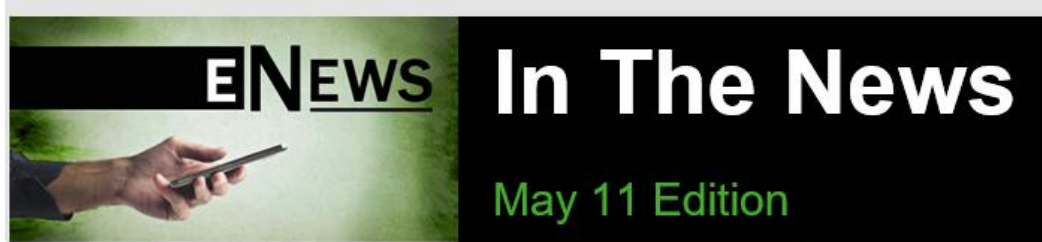


*EMPIRICAL DATA
AND ALGORITHMS
ANALYZED*

*ALL WILL BE
COLLECTED*

A Topic Influencing Your Company, Your Career and Your Future

The Topic...



Artificial Intelligence: Not Just for World Destruction Anymore

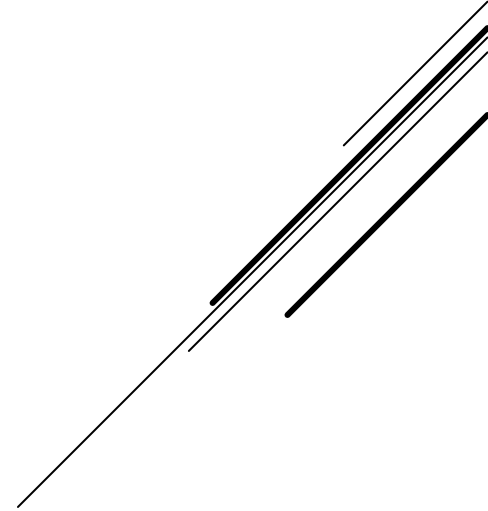
While its depiction in dystopian movies may be overblown, artificial intelligence is set to be a disruptive force in the credit industry. Professionals will need to prepare for coming change and decide whether to resist or embrace the new technology.



What About Bob?

- 38 years of experience in B2B credit/financial management
- Previous Webinars on Paperless, Reimagining, Fraud & Cyber-threats
- Nominated for a 2017 Legal Industry Idea Award
- NACM's CFDD Regional Director and Board Member
- Member of the ISSIP –
International Society of Service Innovation Professionals
- Member of Silo Busters Innovation Team
- Presenter At 2017 ALA regional conferences
- Presenter at the CFDD Annual Conference
- Member of ALAMN's Diversity and Inclusion Committee

Why Discuss This Topic?



Why Discuss This Topic?

☐ Motivation?

Motivation



The Association of Legal Administrators offers convenient timely resources for finance professionals in legal management.



Motivation - Change Is A Business Constant

IF YOU
CHANGE
NOTHING,
NOTHING
CHANGES.

Motivation



The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.

— *Alvin Toffler* —

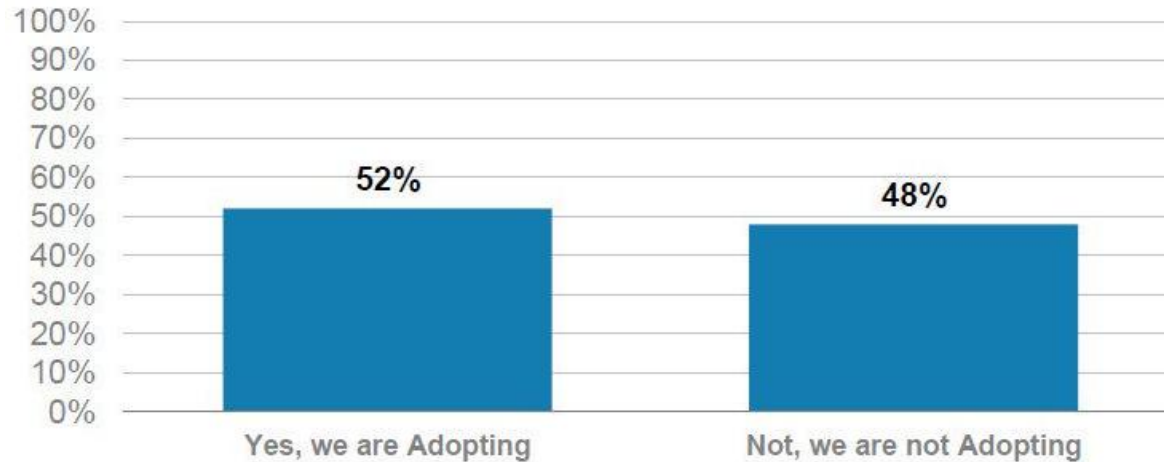
AZ QUOTES

Motivation

2016 Morgan Stanley Study

Over Half of CIOs Expect to Use AI Technologies

Are you currently using or expecting to use Artificial Intelligence / Machine Learnings Solutions?

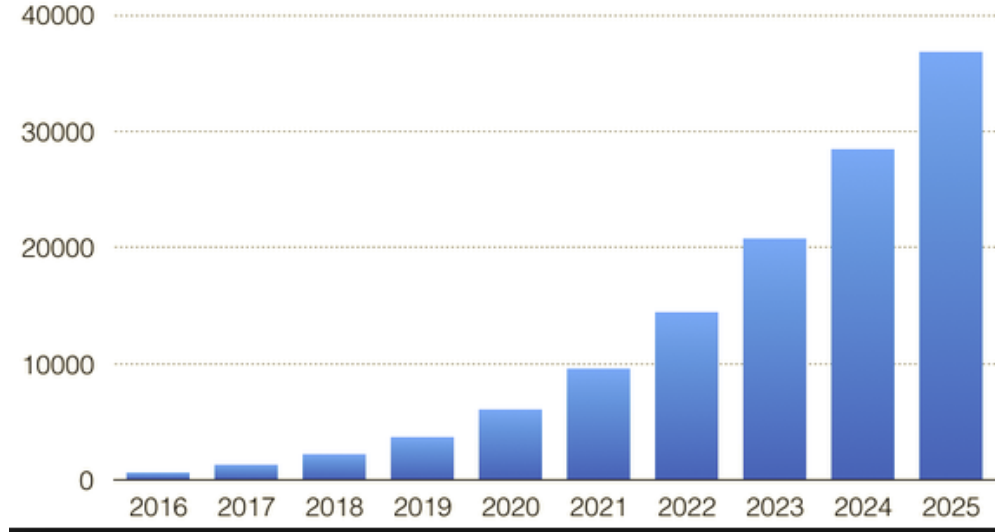


Source: n=100 (US and EU data). AlphaWise, Morgan Stanley CIO Survey

Motivation

2016 A.I. Acquisitions - \$5 Billion

Worldwide Artificial Intelligence Revenue
(in millions)



Motivation - Experts



| United States



[Home](#) > [Industries](#) > [Media](#) > [Publications](#) > [Consumer Intelligence Series](#) > [How artificial intelligence is pushing man and machine closer tog](#)

A revolutionary partnership: How artificial intelligence is pushing man and machine closer together

April 2017

Motivation - Experts



Search 

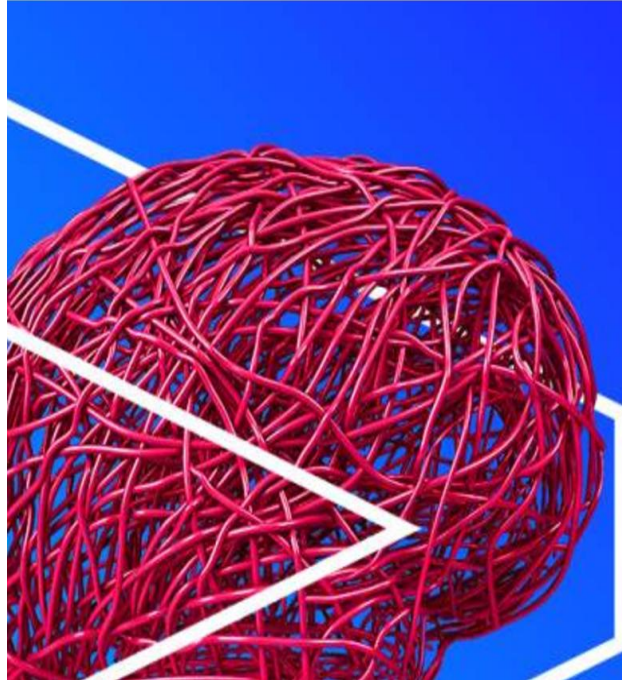


SIGN IN

MENU 



867 Shares  Print



ARTIFICIAL INTELLIGENCE

THE FUTURE OF BUSINESS

How technology that senses, comprehends, acts and learns will help your business to grow.

Why Discuss This Topic Now?

Marc Benioff stated in 2016:

(Started in computer games....now worth \$3.8 billion)

“We're on the cusp of an AI revolution”

“Given AI's wide applications, all companies today face an imperative to integrate it into their products and services; otherwise, they will not be able to compete with companies that are using data-collection networks to improve customer experiences and inform business decisions.”

Why Discuss This Topic Now?

“Over the last 30 years, consumers have reaped the benefits of dramatic technological advances. In many countries, most people now have in their pockets a personal computer more powerful than the mainframes of the 1980s. The Atari 800XL computer that I developed games on when I was in high school was powered by a microprocessor with 3,500 transistors; the computer running on my iPhone today has two billion transistors.

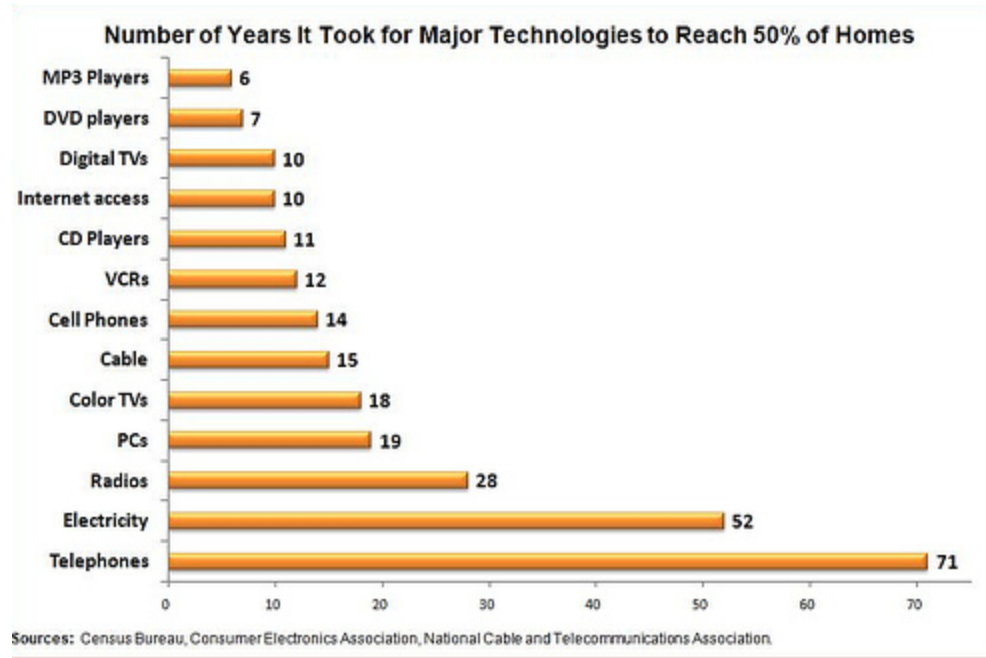
Back then, a gigabyte of storage cost \$100,000 and was the size of a refrigerator; today it’s basically free and is measured in millimeters.”

Why Discuss This Topic Now?

“Even with these massive gains, we can expect still faster progress as the entire planet – people and things – becomes connected. Already, five billion people have access to a mobile device, and more than three billion people can access the Internet. In the coming years, 50 billion things – from light bulbs to refrigerators, roads, clothing, and more – will be connected to the Internet as well.”

Marc Benioff - 2016

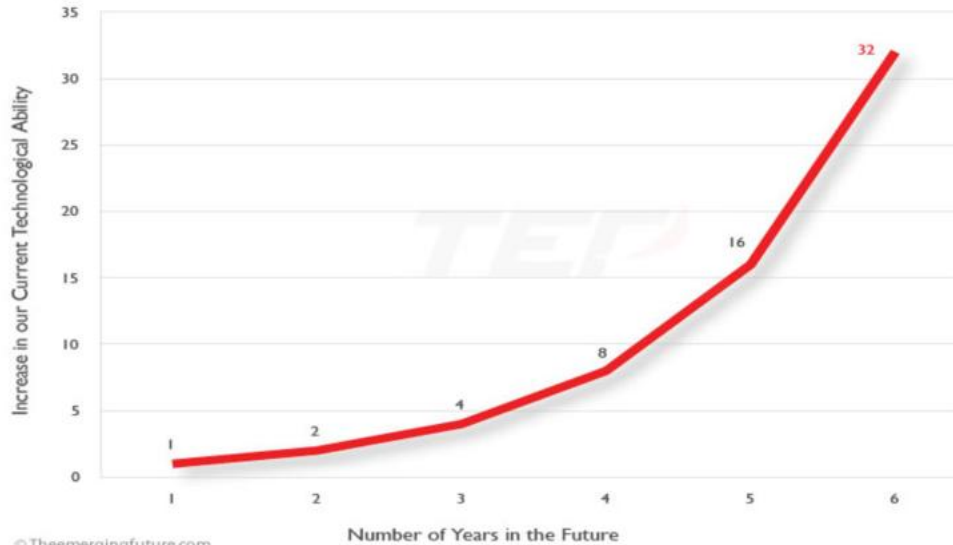
Why Discuss This Topic Now?



Why Discuss This Topic Now?

Pace of Technological Advancement 5 Years

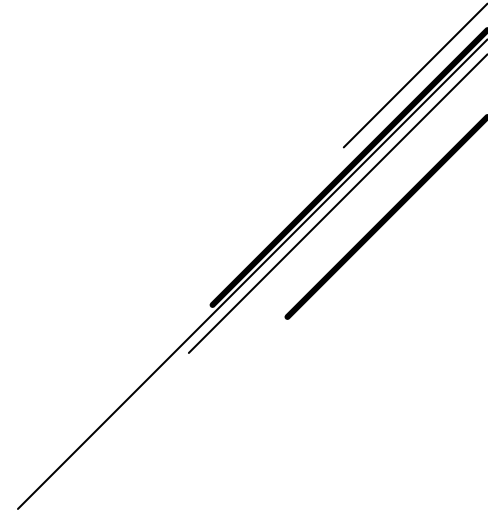
Thirty Two Times More Advanced



©Theemergingfuture.com

Motivation?

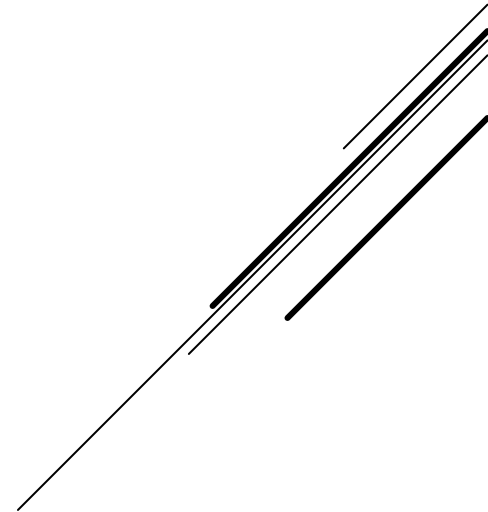
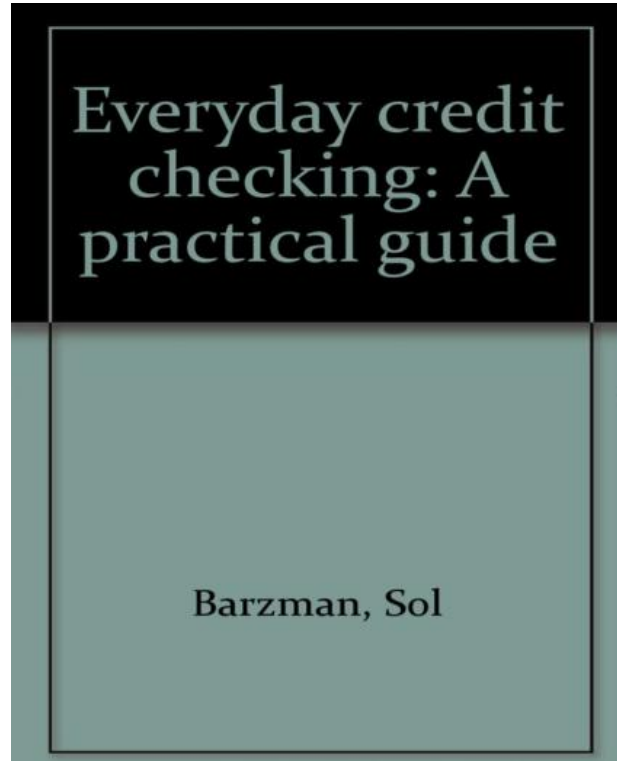
It Is Time



Methodology



Methodology



Methodology



Meaning

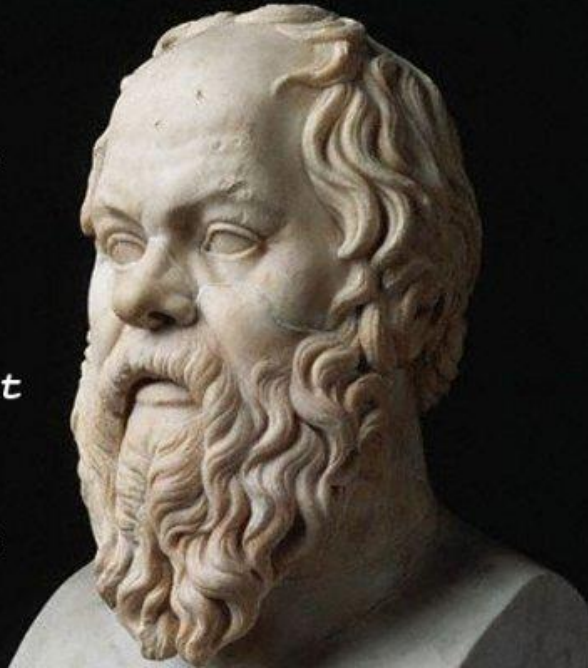
What Does This Mean For
Credit & Collection
Professionals?



Meaning

*The secret of change
is to focus all of
your energy, not on
fighting the old, but
on building the new.*

- Socrates



Meaning

“By failing to prepare, you are preparing to fail.”

Benjamin Franklin



Meaning - Reality

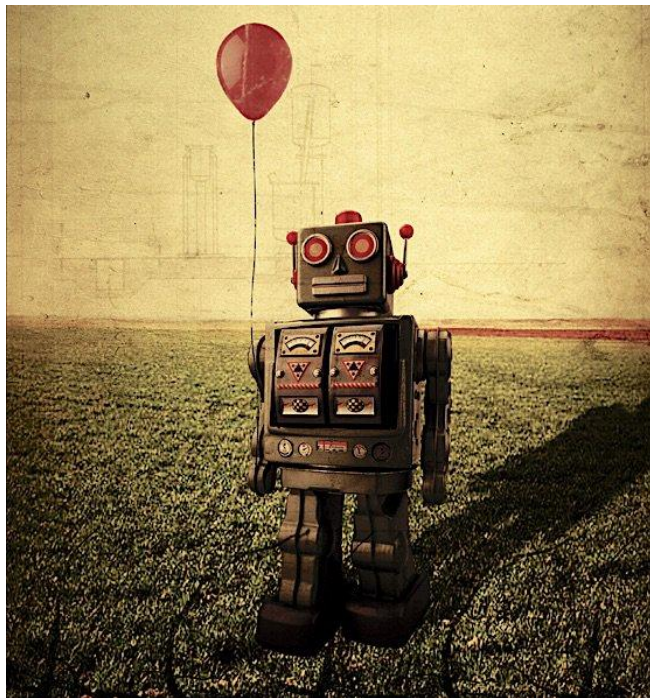
“The promise of A.I. in our industry and all businesses is tremendous. Unfortunately, the reality of today’s market is that artificial intelligence is high on artificial... and low on intelligence.”

Gabriela Isturiz May, 2017

2016 EY Entrepreneur of the Year Award



Definitions



Definitions

Artificial Intelligence:

The theory and development of computer systems able to perform tasks that normally require human intelligence, such as

- 1) visual perception
- 2) speech recognition
- 3) decision-making and
- 4) translation between languages.

Webster online 2016



Definitions

Machine Learning:

The ability of a machine to improve its performance based on previous results.

*Neural networks are one kind of machine learning. Programs and algorithms modified.



Definitions

Automation:

The use of largely automatic equipment in a system of manufacturing or other production process

Robotic Process Automation:

*Automation, RPA and AI are very different technologies and should be treated as such (if you remember one thing make it this: there is no such thing as Cognitive Robotic Process Automation).



Definitions

Robotic Process Automation

“The term “robot” is useful here because the software replaces (or enhances) the work that a human being would normally do. Process automation has been around for a long while (even something like SAP can be described as process automation software), but the difference with RPA is the focus on the human tasks.”

Berkeley University / Wikipedia



Definitions

Big Data:

Extremely large data sets that may be analyzed computationally to reveal patterns, trends, and associations, especially relating to human behavior and interactions.



Definitions

Weak A.I.

Also known as narrow AI, is non-sentient artificial intelligence that is focused on one narrow task. ... All currently existing systems considered artificial intelligence of any sort are weak AI at most. Siri is a good example of narrow intelligence.



Definitions

Strong A.I.

A term used to describe a certain mindset of artificial intelligence development. Strong AI's goal is to develop artificial intelligence to the point where the machine's intellectual capability is functionally equal to a human's.



Is a calculator A.I.?

Calculators are explicitly programmed for what they do. As per the quote by Blaise Pascal goes - “a device that will eventually perform all four arithmetic operations without relying on human intelligence.” ... Calculators do not have decision making abilities. So you cannot consider calculator as a AI device.



Credit Scorecards

Example Scorecard Criteria	Range		Points
Business Stability	0-1	Year	0
	0-2	Years	10
	0-3	Years	20
	3+	Years	25
Bureau Score	0		0
	600-650		0
	700-750		30
	750+		50
Bank Account Stability	0-1	Year	0
	0-2	Years	10
	0-3	Years	20
	3+	Years	25
Total Score	XXX		



Credit Scorecards

Traditional credit score models or default models use a handful of variables and the results are all known.

Methods used include logistic regression, decision trees and traditional statistical analysis. They are not A.I.



Are computers A.I.?

Currently, no computers on the market exhibit full artificial intelligence (that is, are able to simulate human behavior). The greatest advances have occurred in the field of games playing. The best computer chess programs are now capable of beating humans.



Financial Statement Analysis

Apple Inc.
 UNAUDITED CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
 (In millions, except number of shares which are reflected in thousands and per share amounts)

	Three Months Ended		Twelve Months Ended	
	September 26, 2015	September 27, 2014	September 26, 2015	September 27, 2014
Net sales	\$ 51,501	\$ 42,123	\$ 233,715	\$ 182,795
Cost of sales ⁽¹⁾	30,953	26,114	140,089	112,258
Gross margin	20,548	16,009	93,626	70,537
Operating expenses:				
Research and development ⁽¹⁾	2,220	1,686	8,067	6,041
Selling, general and administrative ⁽¹⁾	3,705	3,158	14,329	11,993
Total operating expenses	5,925	4,844	22,396	18,034
Operating income	14,623	11,165	71,230	52,503
Other income/(expense), net.....	439	307	1,285	980
Income before provision for income taxes.....	15,062	11,472	72,515	53,483
Provision for income taxes	3,938	3,005	19,121	13,973
Net income	\$ 11,124	\$ 8,467	\$ 53,394	\$ 39,510
Earnings per share:				
Basic	\$ 1.97	\$ 1.43	\$ 9.28	\$ 6.49
Diluted.....	\$ 1.96	\$ 1.42	\$ 9.22	\$ 6.45
Shares used in computing earnings per share:				
Basic	5,646,916	5,933,845	5,753,421	6,085,572
Diluted.....	5,682,519	5,972,082	5,793,069	6,122,663

Financial Statement Analysis



Financial Statement Analysis

Financial Ratio	How to Calculate it	What it Tells You
Working Capital	$= \text{Current Assets} - \text{Current Liabilities}$ $= \$89,000 - \$61,000$ $= \mathbf{\$28,000}$	An indicator of whether the company will be able to meet its current obligations (pay its bills, meet its payroll, make a loan payment, etc.) If a company has current assets exactly equal to current liabilities, it has no working capital. The greater the amount of working capital the more likely it will be able to make its payments on time.
Current Ratio	$= \text{Current Assets} / \text{Current Liabilities}$ $= \$89,000 / \$61,000$ $= \mathbf{1.46}$	This tells you the relationship of current assets to current liabilities. A ratio of 3:1 is better than 2:1. A 1:1 ratio means there is no working capital.
Quick Ratio (Acid Test Ratio)	$= [(\text{Cash} + \text{Temp. Investments} + \text{Accounts Receivable}) / \text{Current Liabilities}] : 1$ $= [(\$2,100 + \$100 + \$10,000 + \$40,500) / \$61,000] : 1$ $= [\$52,700 / \$61,000] : 1$ $= \mathbf{0.86 : 1}$	This ratio is similar to the current ratio except that Inventory, Supplies, and Prepaid Expenses are excluded. This indicates the relationship between the amount of assets that can quickly be turned into cash versus the amount of current liabilities.

Financial Statement Analysis

Key Ratios - Ratio Analysis

	2006	2007	2008	2009
Balance Sheet				
Cash	451,000	464,530	478,466	492,820
Notes Receivable	1,200	3,200	3,000	3,400
Accounts receivable, net	350,000	360,500	371,315	382,454
Total current assets	1,212,200	1,250,530	1,287,750	1,326,692
Total long-term assets	2,055,000	2,115,900	2,178,627	2,243,236
Total current liabilities	936,000	964,080	993,002	1,022,792
Total long-term liabilities	780,200	807,850	834,070	861,682
Total shareholders' equity	1,551,000	1,594,500	1,639,305	1,685,454
Income Statement				
Total sales	2,010,000	2,060,000	2,121,800	2,391,800
Gross profit	1,065,000	1,086,650	1,119,250	1,270,900
Total operating expenses	317,133	320,767	324,510	328,150
Income (loss) before taxes	764,117	782,621	811,979	960,977
Net income (loss)	615,554	633,477	659,057	798,348
KEY RATIOS				
Profitability Ratios				
Return on equity	40%	40%	40%	47%
Return on assets	19%	19%	19%	22%
Return on sales	31%	31%	31%	33%
Gross profit margin	53%	53%	53%	53%
Asset turnover ratio	62%	61%	61%	67%
Leverage and Liquidity Ratios				
Current ratio	1.30	1.30	1.30	1.30
Quick or acid test ratio	0.86	0.86	0.86	0.86
Leverage ratio	211%	211%	211%	212%
Long-term debt ratio	0.335	0.336	0.337	0.338
Debt to equity ratio	1.107	1.111	1.115	1.118

Financial Statement Analysis

Rage Frameworks – Joy Dasgupta

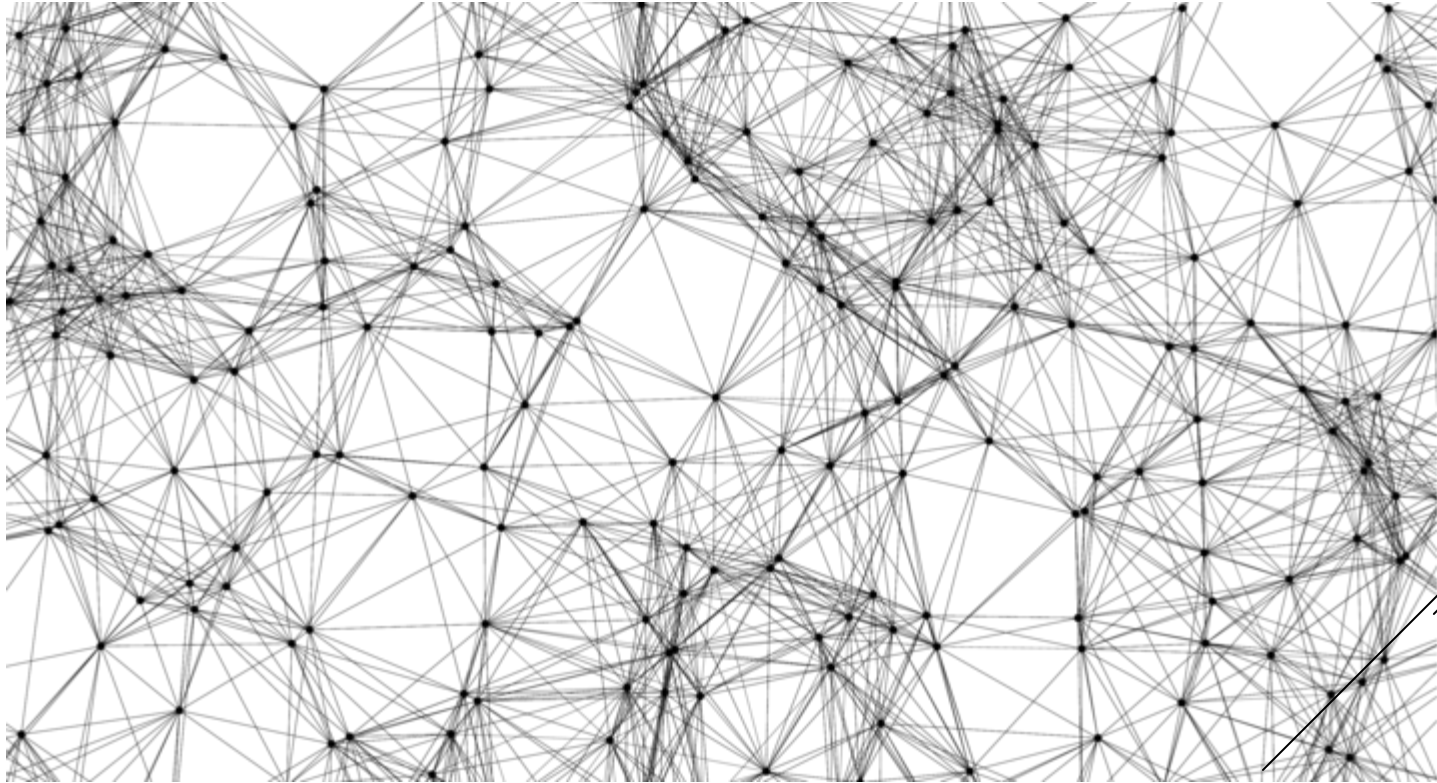
Credit RTI

Continuous, independent and objective, forward-looking ratings on public and private companies globally. RAGE ratings assess both qualitative and quantitative information on a continuous basis from around the world.

Financial Statement Analysis

RAGE LiveSpread™:
Aggregation, extraction and normalization of data from unstructured financial statements, bank statements and income tax returns presented in any form and format.

Financial Statement Analysis



Financial Statement Analysis

AI from a legal & ethical perspective:

Regulations for A.I.

- **Very few rules**
- **Nothing really uniform**
- **Need is great**
- **Swiss Example**



Credit Underwriting

THE UNSTRUCTURED DATA CONUNDRUM

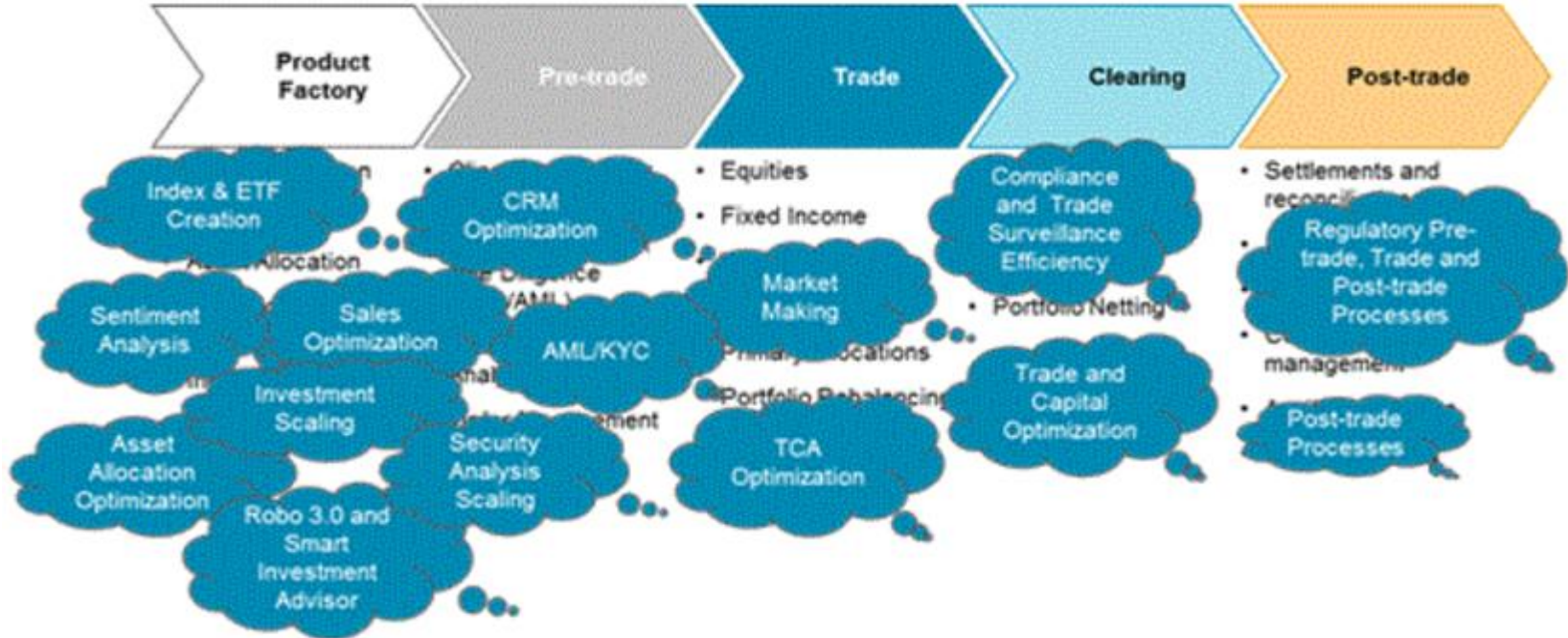
80-90%

of all potentially usable business information is unstructured.

The bigger problem? Financial firms lack the manpower and technology to continuously interpret every blog, news source, and tweet to pick up the signals that potentially affect their active investment strategy. That's why we built Rage Real Time Intelligence (RTI™) for Capital Markets.

Credit Underwriting

Trade Lifecycle Restructuring Enabled by Artificial Intelligence

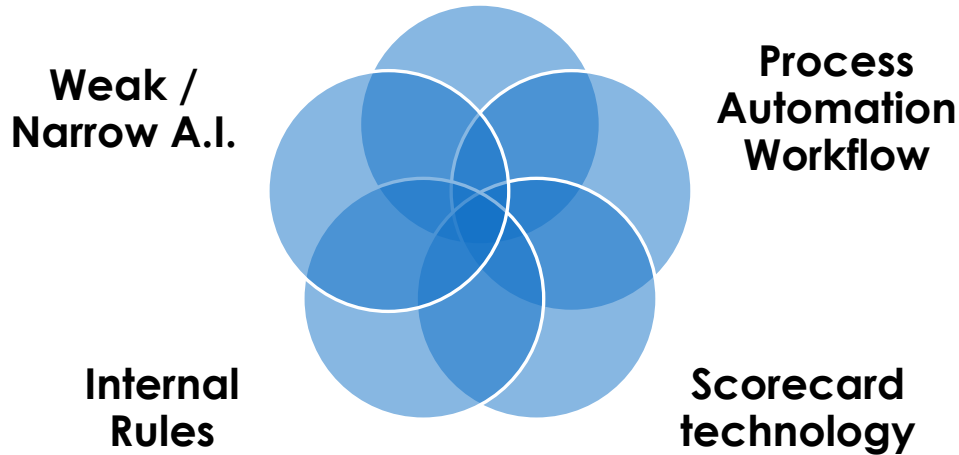


Credit Underwriting

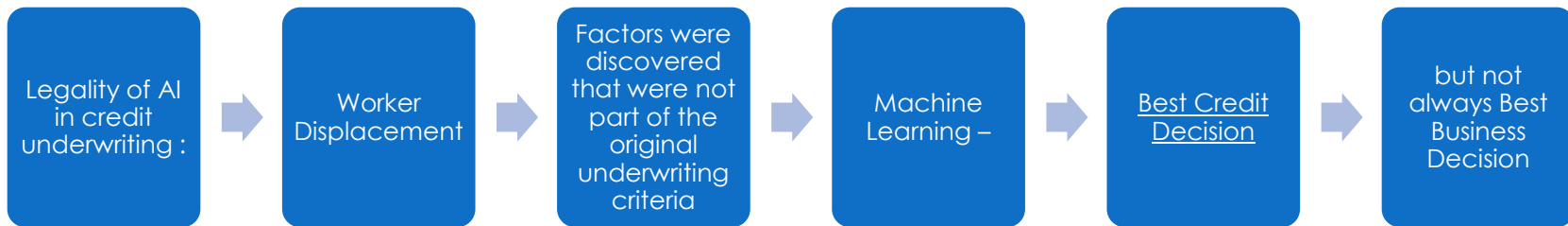
~Experian & Social Media Experiment~

Credit Underwriting

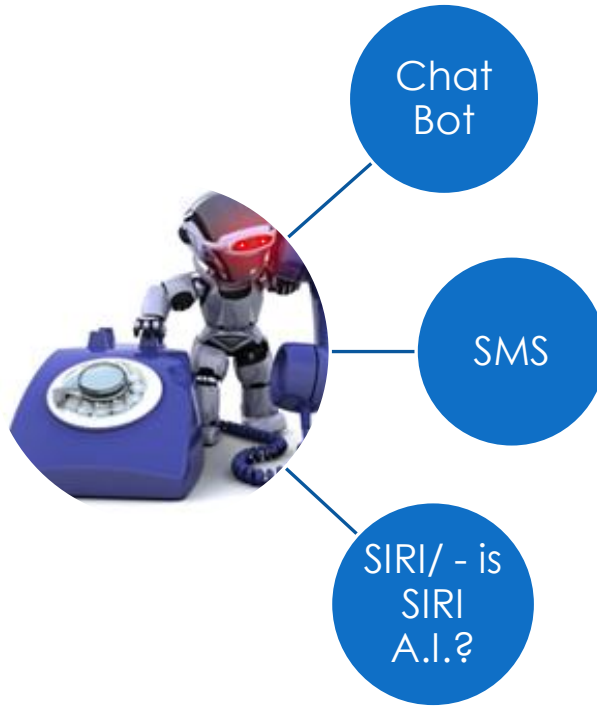
**Fortune 500 Company:
500 – 2000 credit decisions a day**



Legality/Ethics



Collections

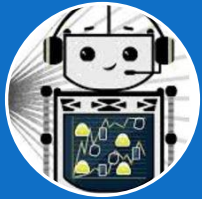


Collections

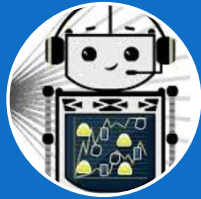
35,00 Chatbots Developed in 2016

- Reality – Conversation
- Remembers everything
- VSA
- Knows patterns and leverages on them

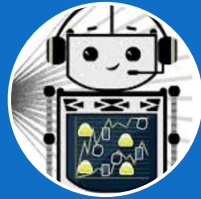
Collections



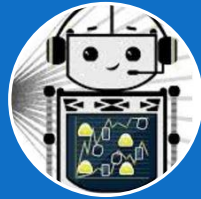
Value-oriented
concept
(insight,
usefulness,
solving a unique
problem)



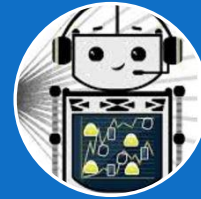
Conversational
UX (logic,
content, overall
experience)



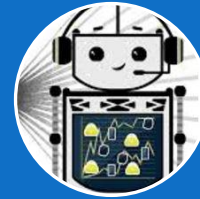
Copywriting
(personality,
tone, manner)



Marketing
(branding,
promotion,
discovery
funnel)



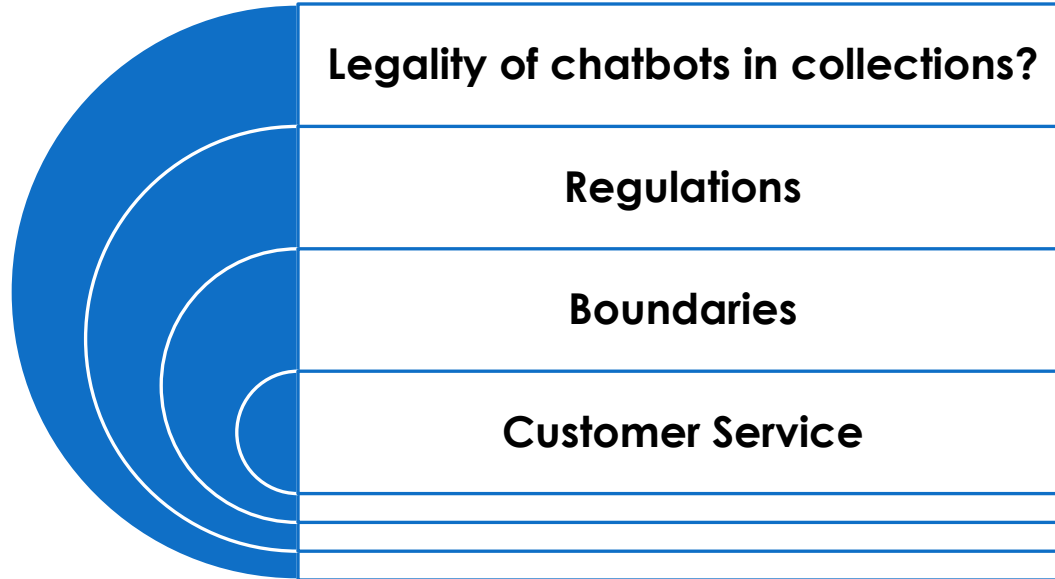
Business model
(monetization)



Results (number
of users, value
creation,
engagement)



Ethics & Legality



Meaning - Reality

“The promise of A.I. in our industry and all businesses is tremendous. Unfortunately, the reality of today’s market is that artificial intelligence is high on artificial... and low on intelligence.”

Gabriela Isturiz May, 2017

2016 EY Entrepreneur of the Year Award



Moving Toward A.I.



As we move towards
greater legal tech...

Need for
positive human
interaction will
increase?

Mission



Maximize
Company
Profits



Minimize
Company Risk



Maintain A
STRONG Cash
Flow



Manage
Everything
with Customer
First



Map Your Processes

New Client Intake Process Narrative

- 1) CFS Specialist receives new client intake form from one of three sources:
 - a) Records Department
 - b) Billing Partner/LAA
 - c) Practice group chair

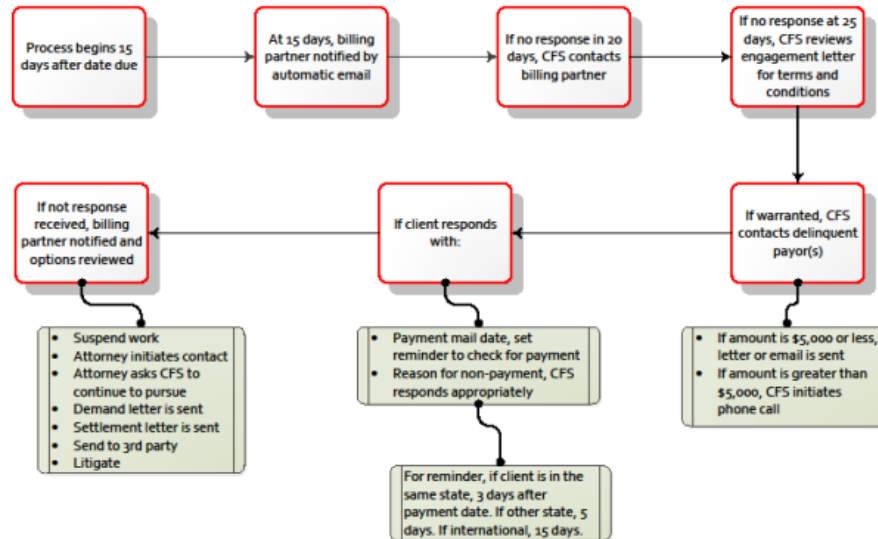
- 2) CFS Specialist performs research from various sources and databases:
 - a) Domestic – D&B and/or Experian reports pulled and report is sent to CFS Manager
 - b) International – Look up reports available from SkyMinder and send a list of them to the CFS Manager
 - i) CFS Manager determines which report(s) to order and advises CFS Specialist
 - ii) CFS Specialist orders appropriate report(s)
 - (1) Depending on time before report(s) delivery, CFS Manager may also notify Records and billing attorney of possible delay in processing
 - c) An OFAC screening is performed on all international clients by CFS Manager

- 3) CFS Manager reviews information to determine credit line
 - a) If information is sufficient for anticipated billings, CFS Manager signs off on new matter form
 - b) CFS Manager may also contact billing partner for additional information or to discuss anticipated risk(s). After discussing, one of three options then occurs:
 - i) A retainer is requested from client
 - ii) Decision is made to move forward and grant appropriate credit line
 - iii) Decision is made to turn down engagement. Records is then notified of this, if form had come to CFS from Records

- 4) If client engagement is accepted, completed and signed, the new client intake form is sent to Records

Map Your Processes

Collection Process

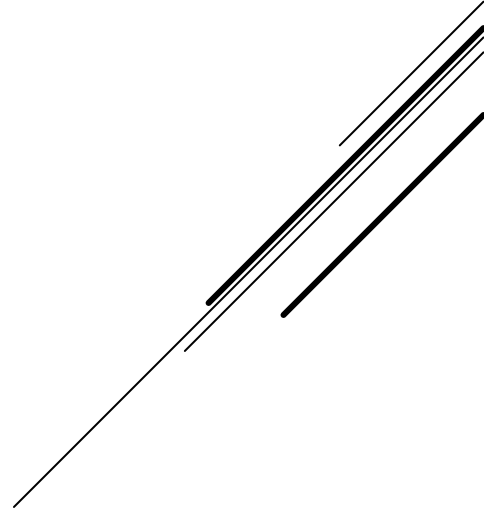


Are We Correctly Understanding All Aspects of A.I.?



Cutting Through the Hype

Best Practices For Credit Applications



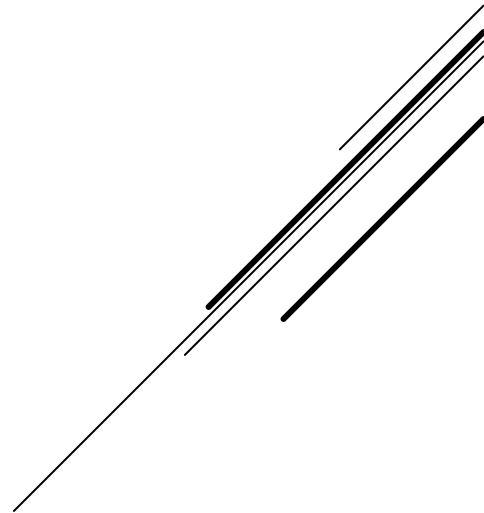
Building and Growing Together

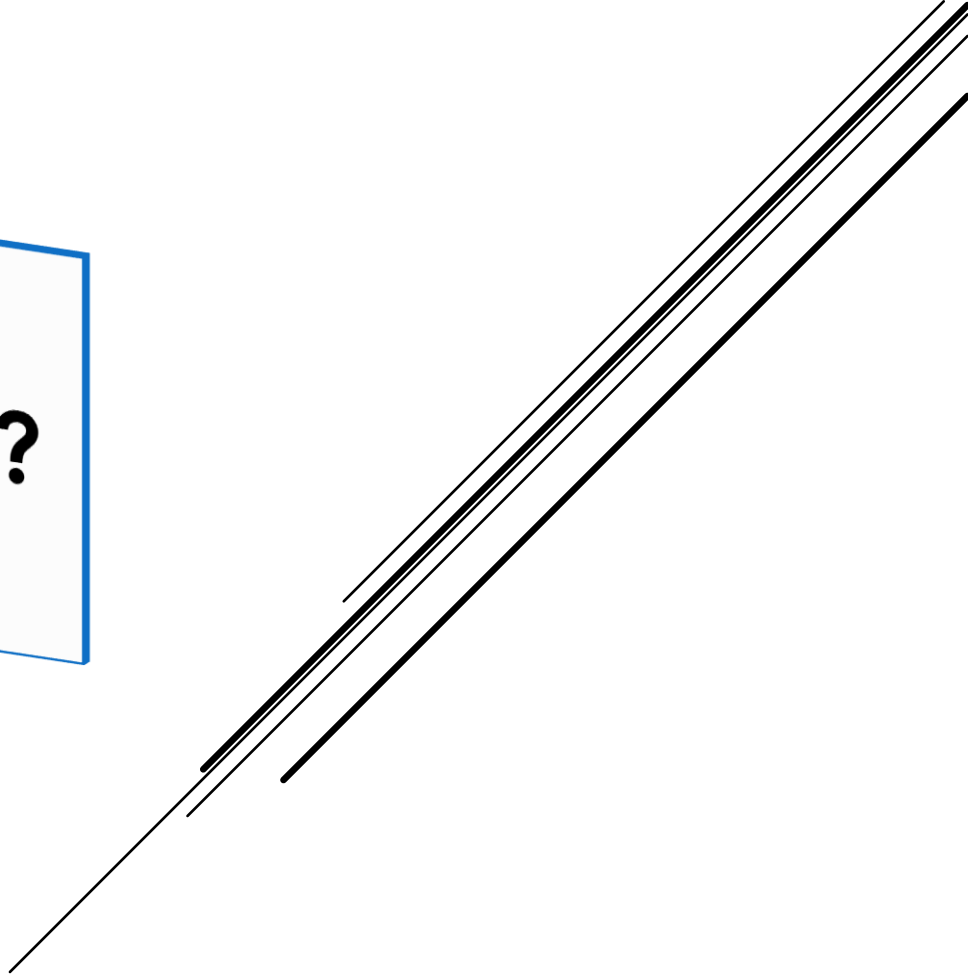


Where Will Your Story Lead Us?



Hopefully this small amount of information will help you prepare for the future and also assist you in evaluating A.I. proposals.





THANK YOU!

