Technology and Innovation

An EF Perspective and Update

Independent Business Council Steering Committee

Tues, Feb. 21, 2023, 3pm ET

Agenda

AI, Machine Learning and Big Data:

1. How are other industries and businesses using these technologies to address risk, increase productivity and improve customer experiences?
2. What could this mean for our industry?
3. Examples Tamarack is seeing of these technologies applied in our industry.

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Guiding financial innovation

Enhance operations and financial results

System assessment

Implementation and integration

Migration and business continuity

Productivity improvements

Reporting and analytics

Automation utilities

- 20+ years serving Equipment Finance
- Suite of SaaS products for digital productivity
- 30+ Equipment Finance software and technology professionals

Better, faster decision making with AI

Data Console
All your data in one place provides business intelligence you can use

Predictors
Use AI to learn faster and manage risk for better outcomes

TrailView™ Borrower Portal
Empower clients to manage their accounts so your teams can focus on more valuable tasks

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Growing from experiences . . . to Experience Design

RELIANCE BANK

Honeywell

ALCHEMIST ACCELERATOR

FirstNationalBank

DIGI

3M

skywater TECHNOLOGY FOUNDRY

TheraTec Connected Care Technologies

Cognito Networks Powering IoT for a Smarter Enterprise

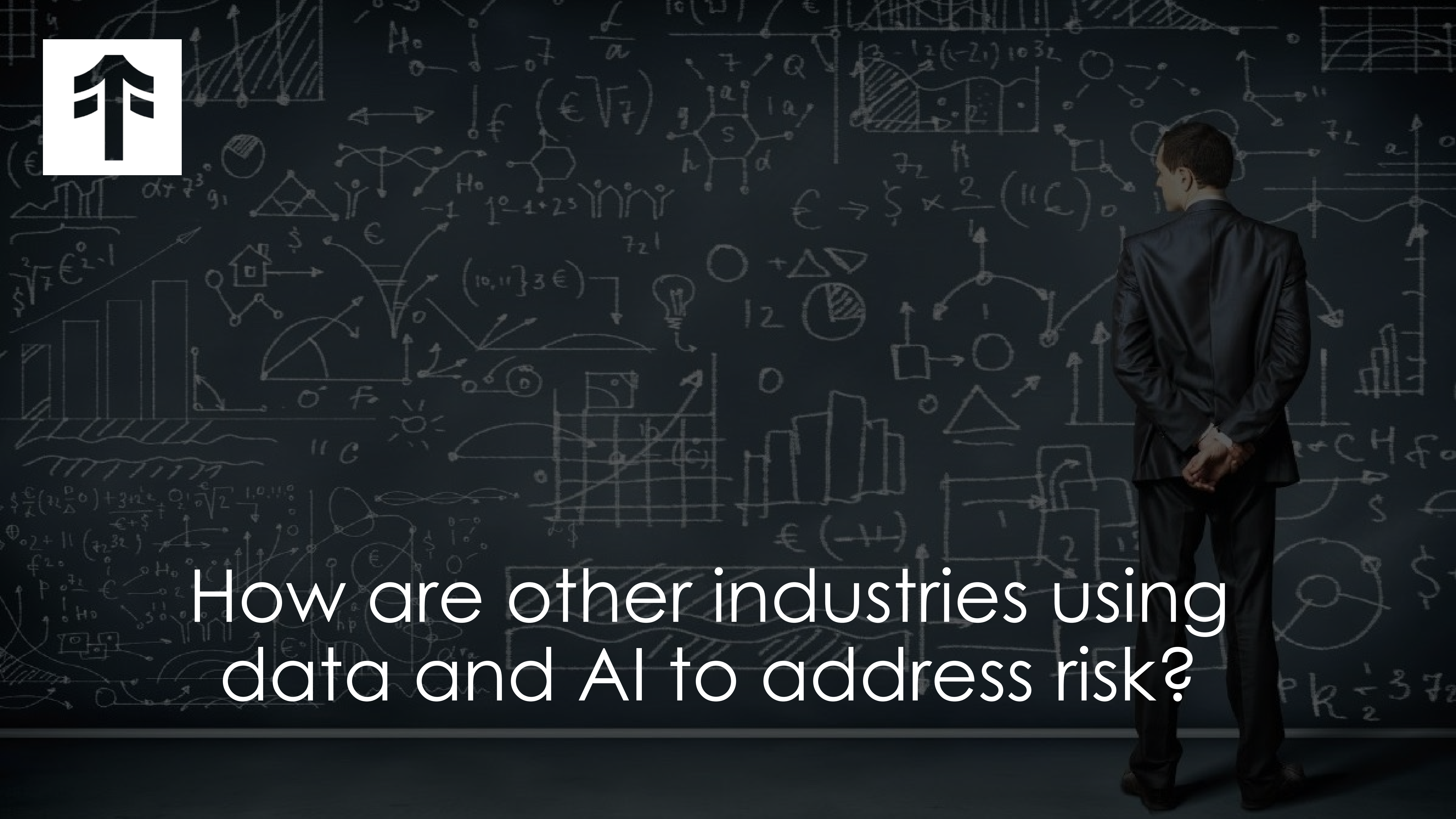
LOGIC PD™

VINCEREHEALTH

Reuleaux Technology

Tamarack™ Guiding financial innovation

1990 2020 2030


How are other industries using data and AI to address risk?

Others using AI to manage risk

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- 1. AI Application in E-Commerce
  - ~~Personalized Shopping~~
  - ~~AI-Powered Assistants~~
  - **Fraud Prevention**
- 3. Applications of AI in Lifestyle
  - ~~Autonomous Vehicles~~
  - **Spam Filters**
  - **Facial Recognition**
  - ~~Recommendation System~~
- 7. Applications of AI in Healthcare
- 8. Applications of AI in Agriculture
- 14. Applications of AI in Finance
  - …**detect** changes in transaction patterns and other potential red flags that can signify **fraud,** AI can also **better predict and assess loan risks.**

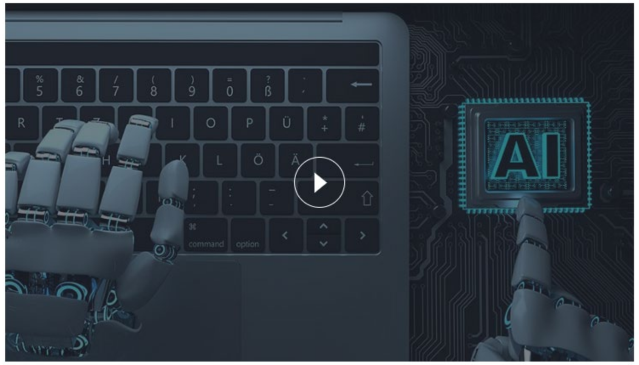
- 16. AI in Data Security
  - **Identifies Unknown Threats**
  - **Flaw Identification**
  - **Threat Prevention**
  - **Responding to Threats**
  - **Recognize Uncharacterized Action**
- 17. AI in Travel and Transport
  - **Heavy Goods Transportation**
  - **Traffic Management**
  - ~~Ride-Sharing~~
  - **Route Planning**
- 18. AI in Automotive Industry
  - ~~Manufacturing~~
  - **Supply Chain**
  - ~~Passenger and Driver Experience~~
  - **Inspections**
  - **Quality Control**

simplilearn

AI Applications: Top 18 Artificial Intelligence Applications in 2023

Lesson 2 of 12 By Avijeet Biswal

Last updated on Feb 7, 2023 605004 20



https://www.simplilearn.com/tutorials/artificial-intelligence-tutorial/artificial-intelligence-applications#:~:text=Artificial%20Intelligence%20is%20used%20to,faster%20pace%20than%20human%20laborers.

AI in Healthcare: Prior Authorization

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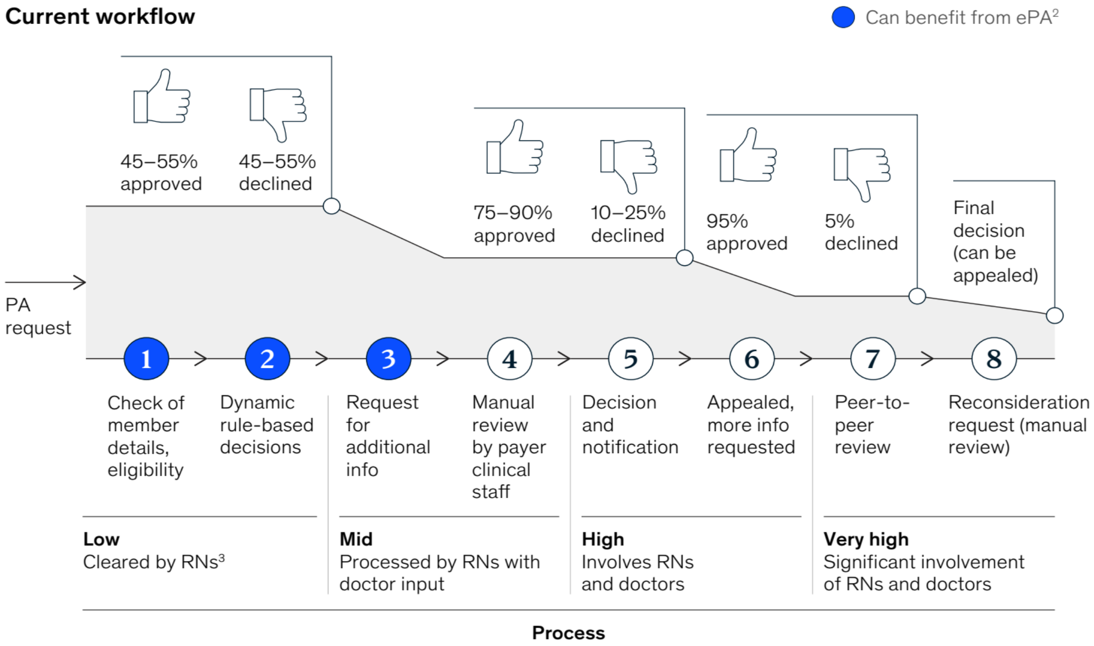

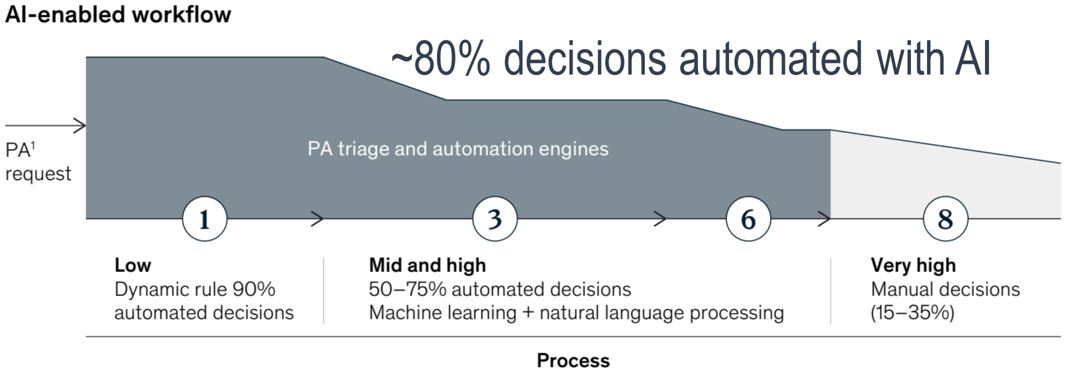

Key measures

- Speed [Wks&Days → Minutes]
- Accuracy (Data Sent vs. Data needed in Policy)
- Transparency
- Eliminate bias [Automated Policy Matching]
- Gamesmanship (Fraud)

Clinical Prior Authorization		Equipment Finance
Utilization Management	→	Underwriting
Operational Efficiency	→	Productivity
Doctors/Providers	→	Lessees/Borrowers

Silicon Valley "Patient finds Dr." apps trying to become brokers

McKinsey & Company

Healthcare Systems & Services Practice

AI ushers in next-gen prior authorization in healthcare

AI in Photography

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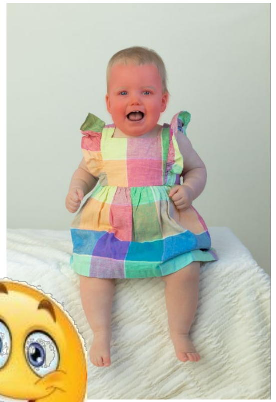
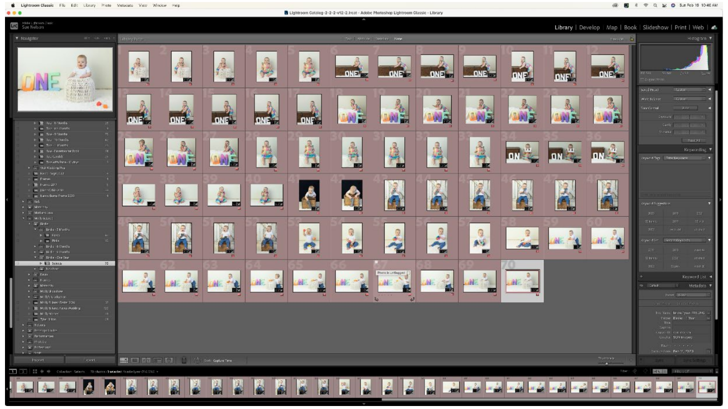
- Three primary applications
  1. Editing RPA
  2. AI does the editing
  3. AI creates the photo –
     "Sunset over waves on beach."

Edit once

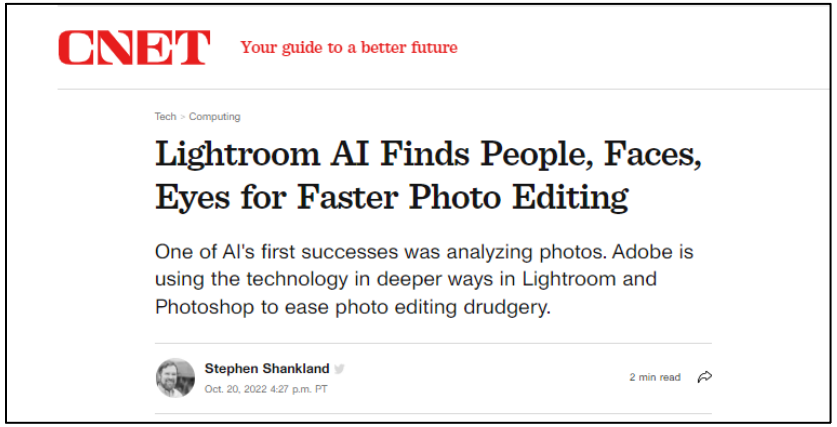


Apply many times



"AI is life changing."

-- Susan Nelson, SGN Imagery



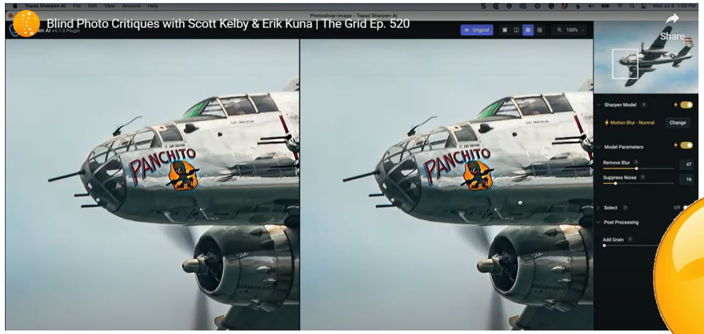
CNET Your guide to a better future

Tech > Computing

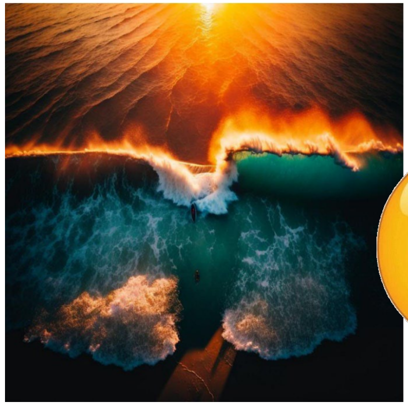
Lightroom AI Finds People, Faces, Eyes for Faster Photo Editing

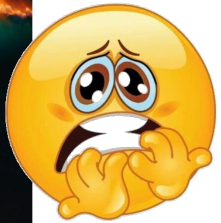
One of AI's first successes was analyzing photos. Adobe is using the technology in deeper ways in Lightroom and Photoshop to ease photo editing drudgery.

Stephen Shankland
Oct. 20, 2022 4:27 p.m. PT
2 min read

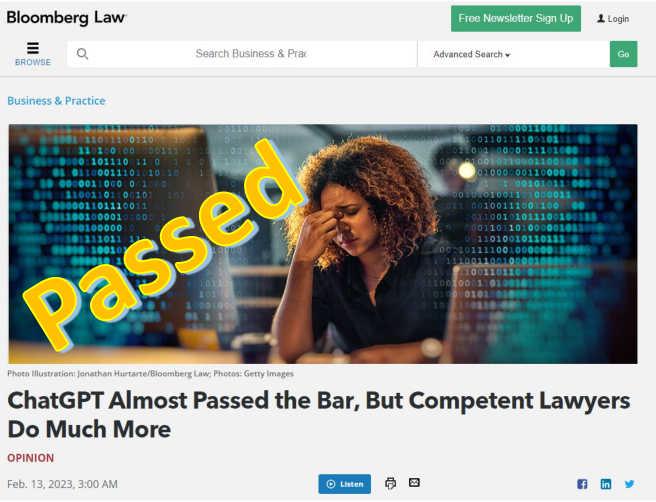


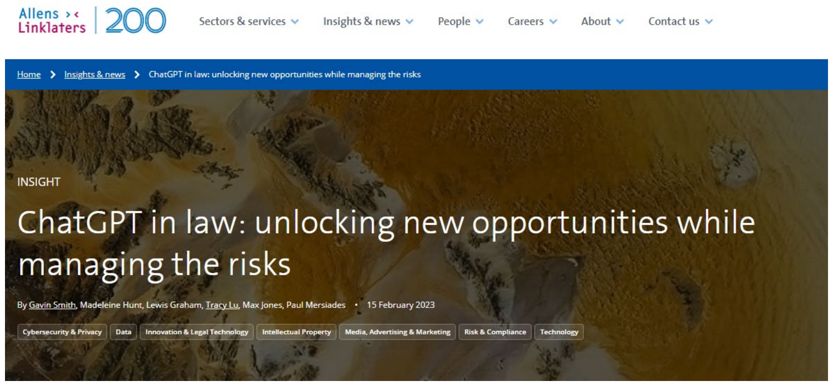
"Is my skill photography or editing?"





Natural Language Processing (NLP) does Law





Opportunities for legal practitioners

- Improved productivity and efficiency
- Enhanced communication
- Cost reduction
- Access to a broader range of expertise

Risks for legal practitioners

- Overestimation of legal knowledge
- 'Hallucination' / making up content
- Potential bias – *comes from sources scanned*
- Confidentiality and legal professional privilege
- Copyright ownership – *varies by region*

ChatGPT "talks" with customers: The Key

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Human efforts

- ***Detroit Lakes***
- ***Jump River***
- ***Ladysmith***
- ***Bruce***

Inspired by big bank lender experience

ChatGPT efforts

- ***Wauwatosa***
  - Write a gentle late payment notice
- ***Springfield***
  - Write a second notice of late payment
- ***Chetek***
  - Write a friendly collections notice
- ***Appleton***
  - Write a creative late payment notice
- ***New Auburn***
  - Write a funny collection notice on a lease
- ***Albany***
  - Write a letter that will get someone to make a lease payment on a bulldozer

Inspired creative "collector"

What are some implications and opportunities for AI in Equipment Finance?

What is AI?

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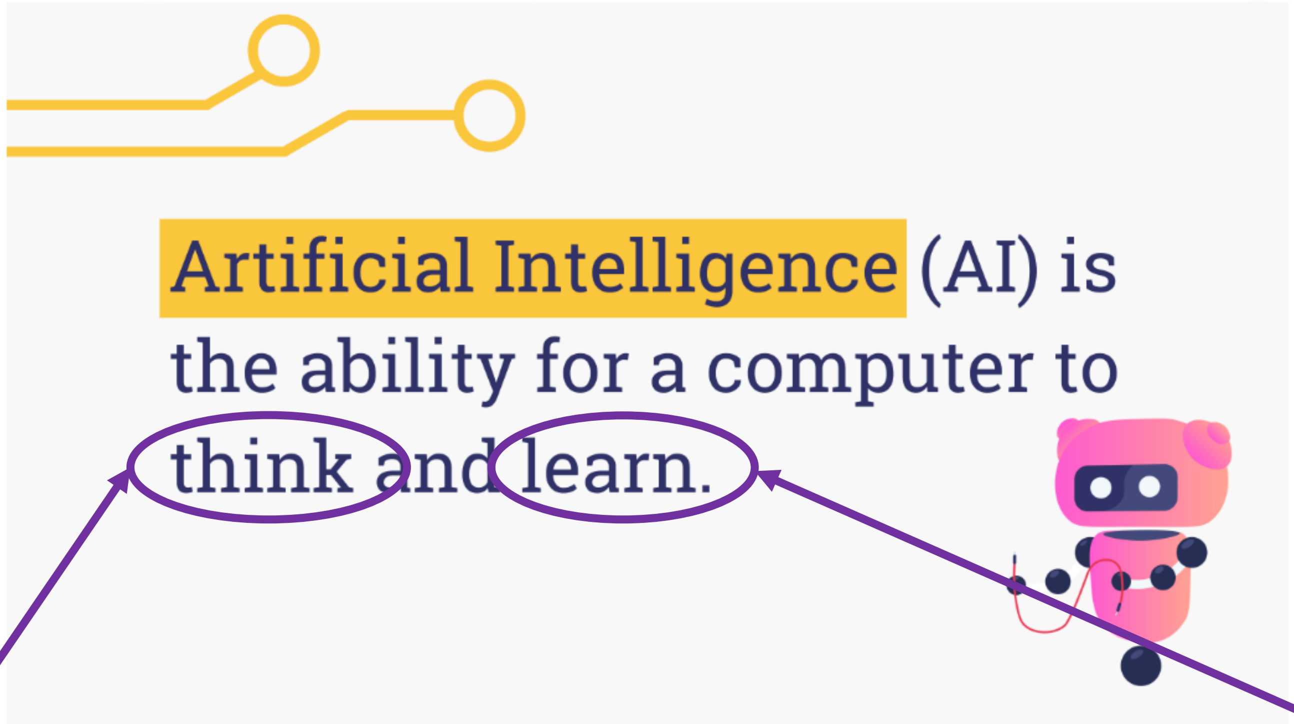

Calculate, model, and predict

Trial and error

https://www.inspiritscholars.com/blog/**what-is-ai-for-kids**/

Learn how? Embrace failure.

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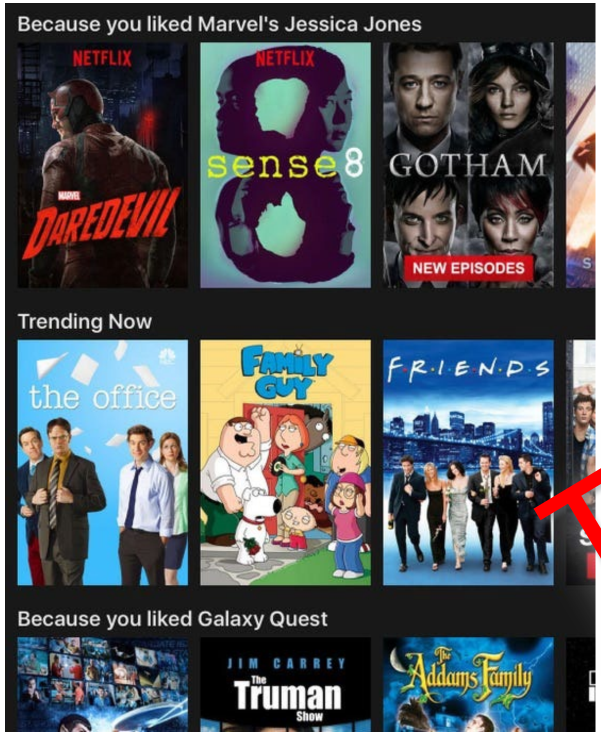
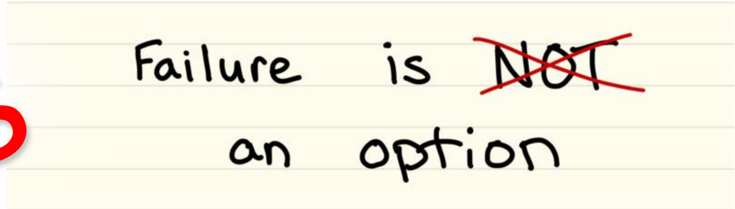
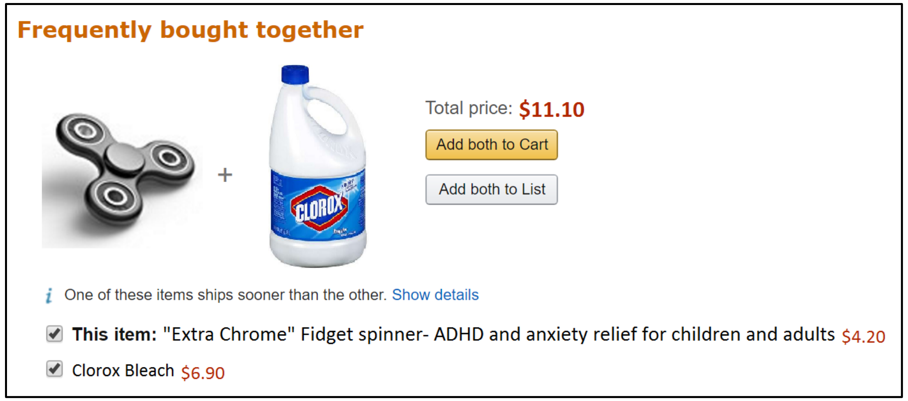


This can be hard. . .

. . .and dangerous





What are the Economics of AI?

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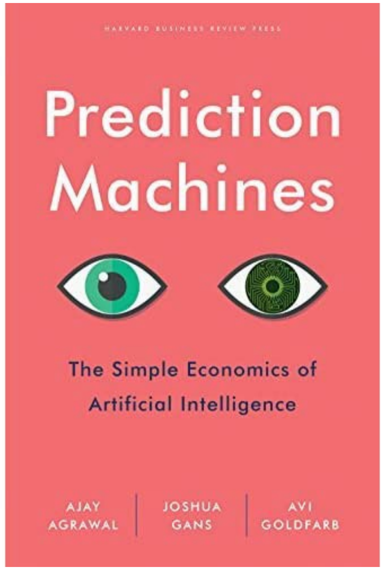
“the new wave of artificial intelligence does not actually bring us intelligence but instead a critical component of intelligence—prediction.”

“We are narrow thinkers, we are noisy thinkers, and it is very easy to improve upon us.”

“As AI takes over prediction, humans will do **less of the combined prediction-judgment** routine of decision making and focus **more on the judgment role alone.**”



Economist Dr. Ajay Agrawal

https://www.economist.com/podcasts/2019/10/09/the-promise-and-peril-of-ai

Building a predictor for EF

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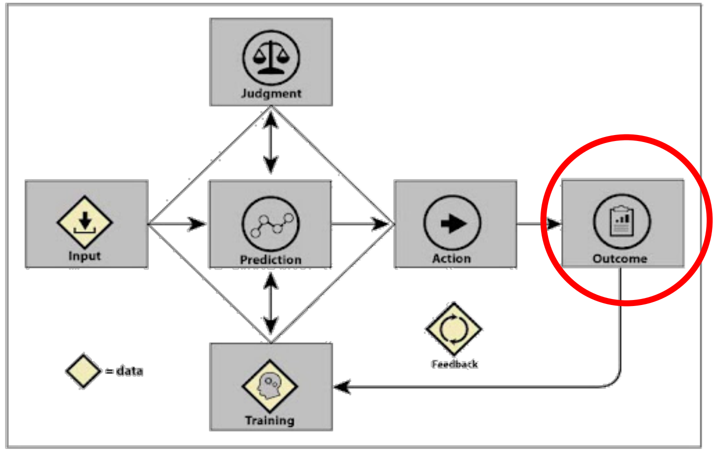
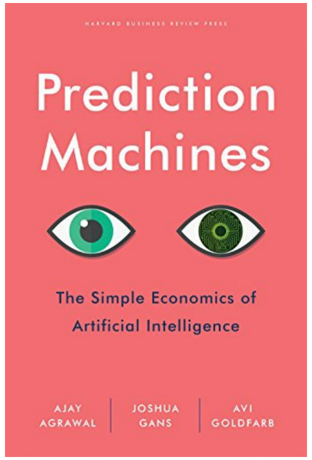
1. Identify the target outcome
    - How measured
    - Possible states

2. Identify input characteristics

3. Train, test, adjust, & repeat





Outcomes	
Payment/Delinquency	Usage/Cash Generation (IoT)
Tier/Rate/Yield	Residual Value
Fund/Sell the Deal	Legal action required
Lender Partner	Analyst/Salesperson
Term/End State	Other…

Predicting outcomes to solve problems faster

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Origination

Look-to-Book	Is this deal worth our time? How do we help Brokers help us?
Delinquency and Tier (Rate)	Does this deal fit our strategy? Automate underwriting.
Delinquency	Is this deal worth the risk?

Collections

Pay Anyway	Do we need to call this account?
Delinquency with Updates	Is this deal weakening? Should we take action now?
Cash Generation	Is the business performing to make payments

Syndication and Funding

Syndication	Do we hold or sell this paper?
Lender	Which funding partners will want this deal?
Lender and Tier (Rate)	Can we add a premium to this deal, or must we discount?

Portfolio Management

Term with End State	Is this deal likely to Renew or Return? Is this deal a buyout?
Syndication with Lender-match updates	Has this deal aged properly for sale?
Residual Monitoring	Are residual values following projections?

Bold *= production or prototyped*

Past performance models future outcomes

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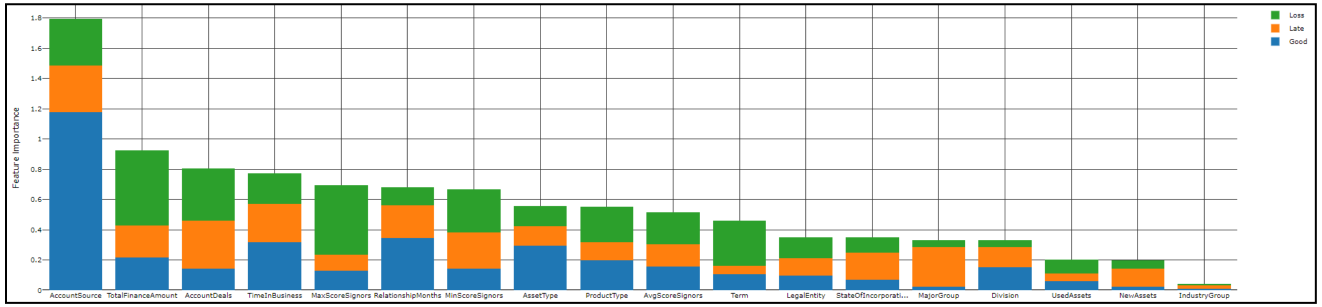
Data Category	Data Element	
Customer Data	Legal entity (Proprietorship, LLC, etc.)	★
	Home Ownership	
	Time in Business	★
	Bank Relationship	
	Trade References	
	Lease/Loan Secured Debt	
	Business location	★
	Asset Type/Class	★
	Asset New/Used	★
Current/prior Business Data	Length of Relationship	★
	Current balance/exposure	★
	Delinquency Counter	★
	Lease/Loan Type	★
	Contract gain/loss (Write down)	
	Accrual/Non-accrual	
Financial Data	Business Size (Revenue)	★
	Business/Asset Size (Asset)	
	Income tax return (Net income)	
	Balance Sheet leverage ratio	
	Debt Coverage Ratio	
Credit Service Scores	Credit Score (FICO, personal, business)	★
	D&B Financial Ratios	
	D&B Composite Rating	
	Experian/Paynet	★
	Moody's Risk Score	
Industry	SIC/NAICS Code	★
	Business Type	★
Public Standing	Bankruptcy/Legal Action	
	Adversarial actions	

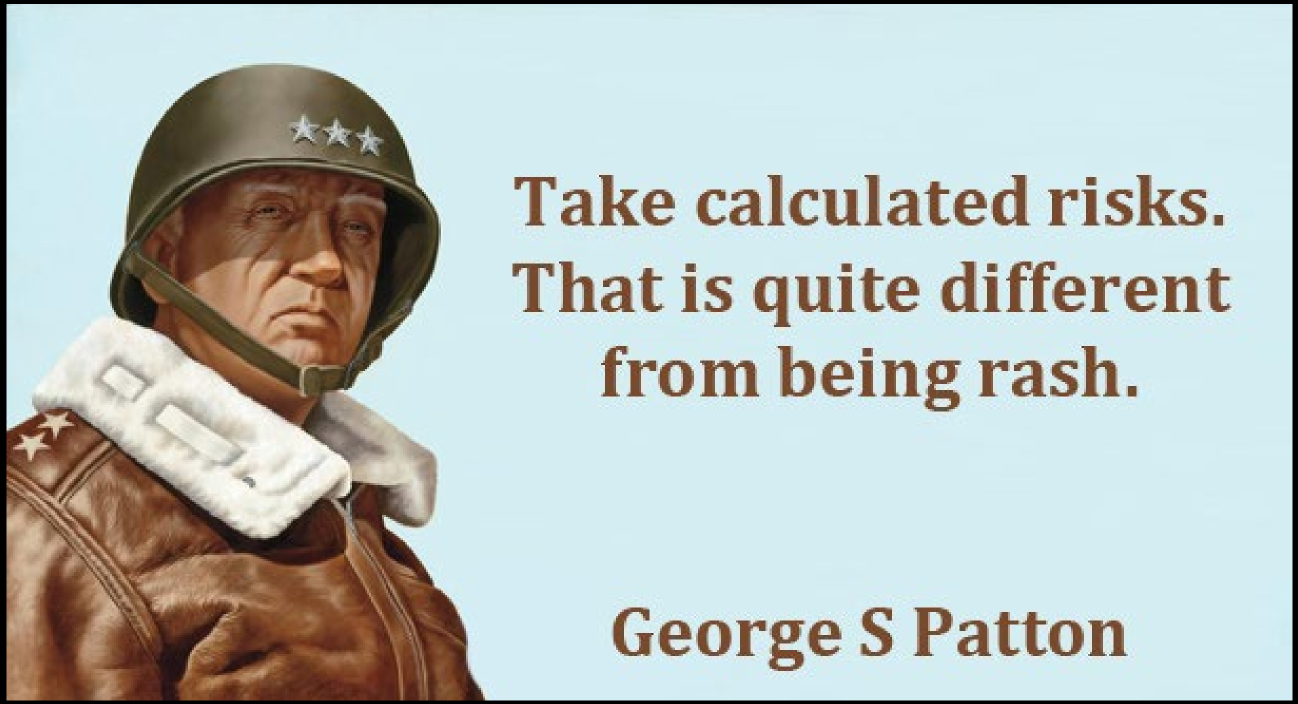


Parameter importance reveals underwriting personality

Trained & tested machine learning model for the way you do business

Predictors

- Underwriting
  - Delinquency
  - Tier
- Funding
  - Syndication
  - Lender



Embrace risk systematically…

Managing risk faster with BI, ML, and AI.

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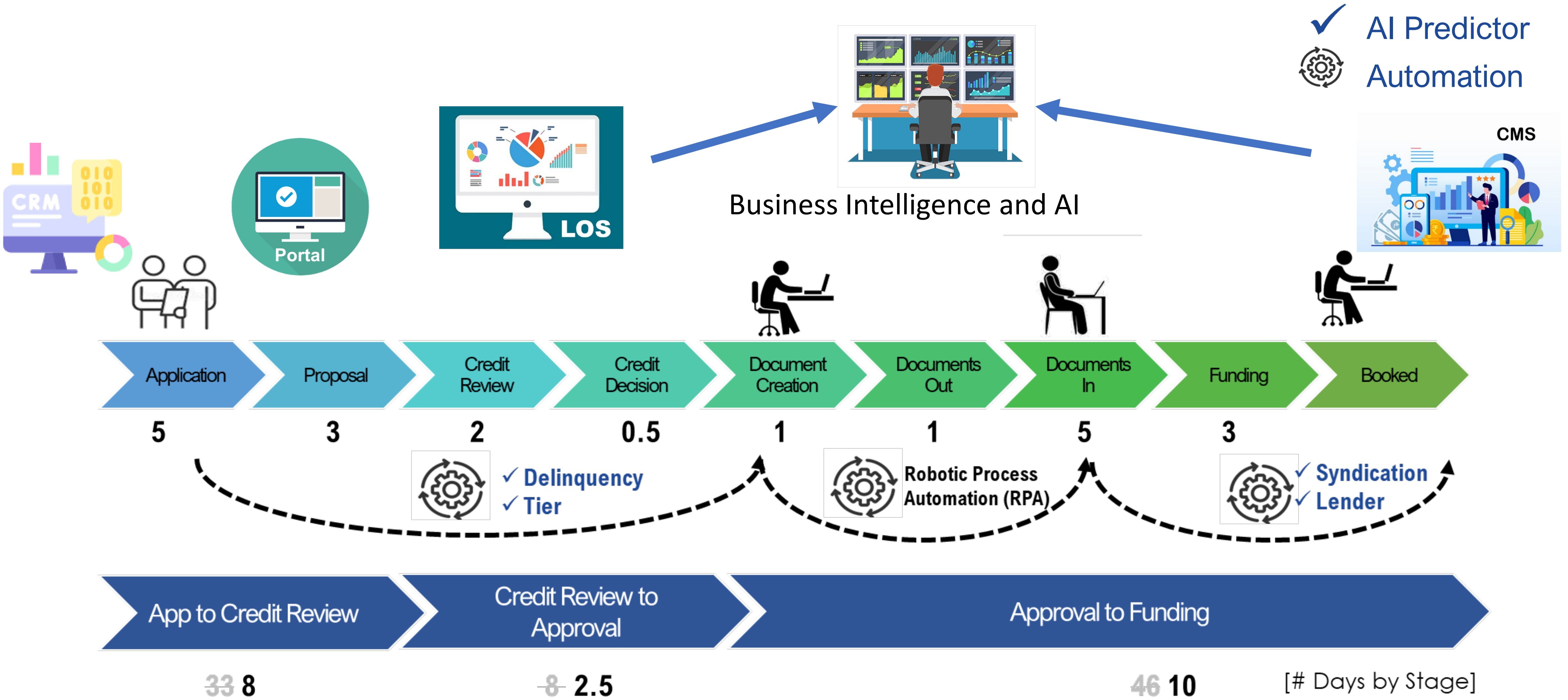

AI Quantifies Risk for better, faster decisions

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Quantified risk policy

Proposal

Tier	8.5% | A	83%
Delinquency	Good	90%

Underwriting

Quantified matching policy

Syndication	Yes	65%
Lender	ABD Bank	80%

Funding

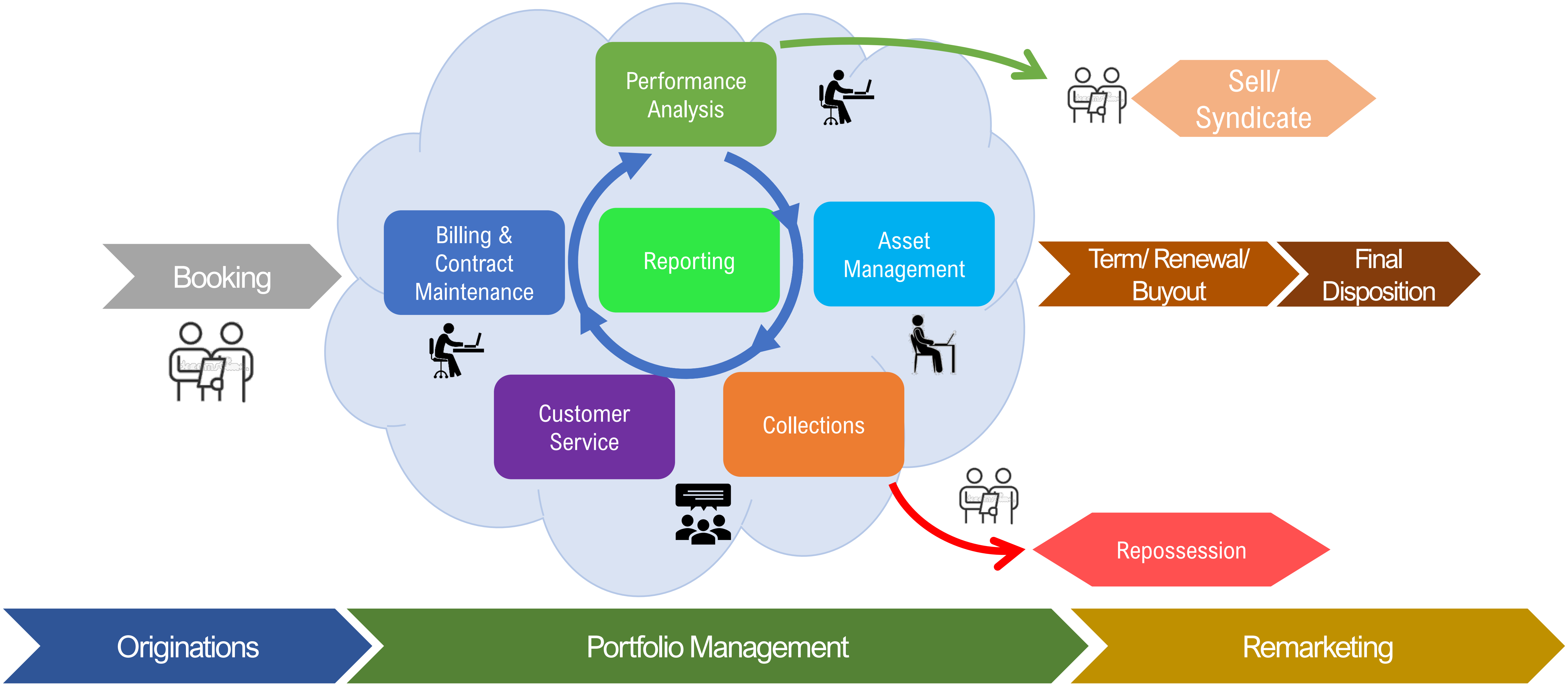
Predictors
- Tier
- Delinquency

Predictors
- Syndication
- Lender

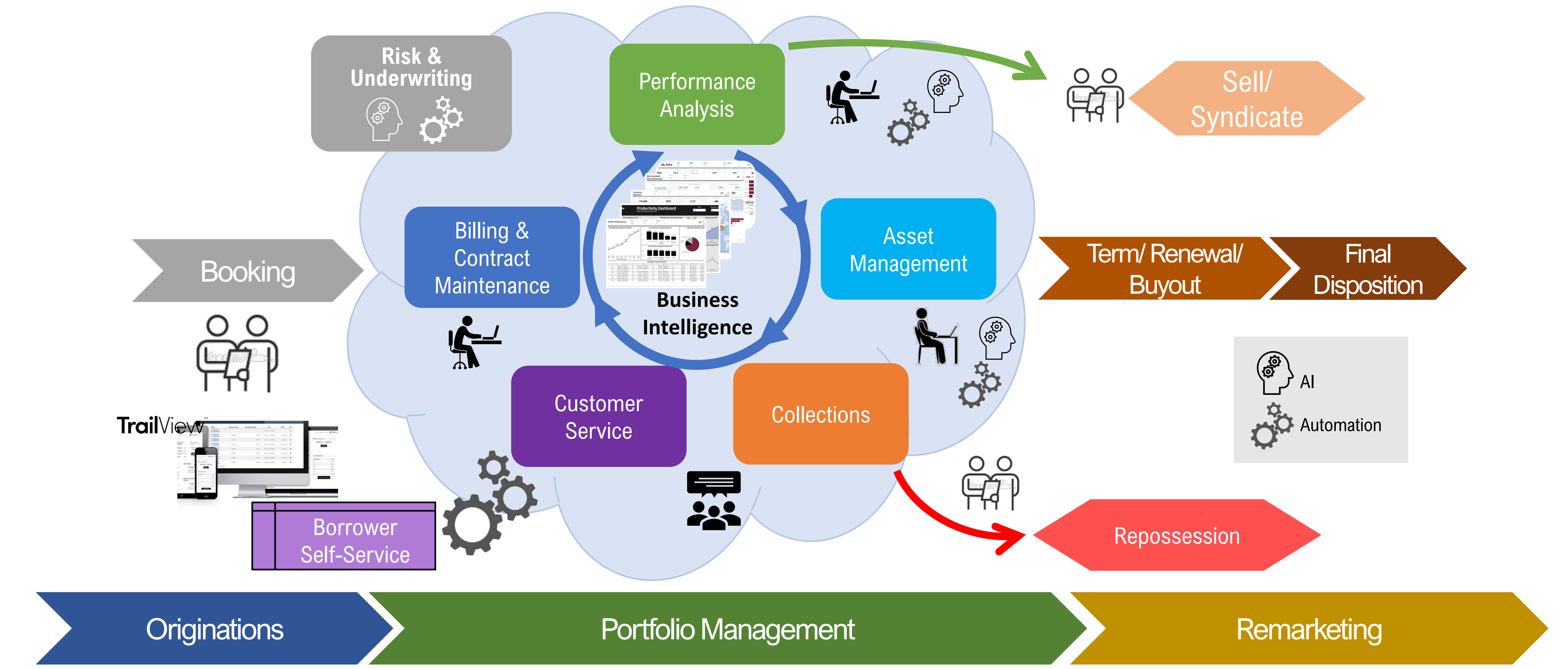
AI Automation

- Quantified risks enable policy-based automation
- Quantified lender matching enables funding automation
- Automated Time → Minutes

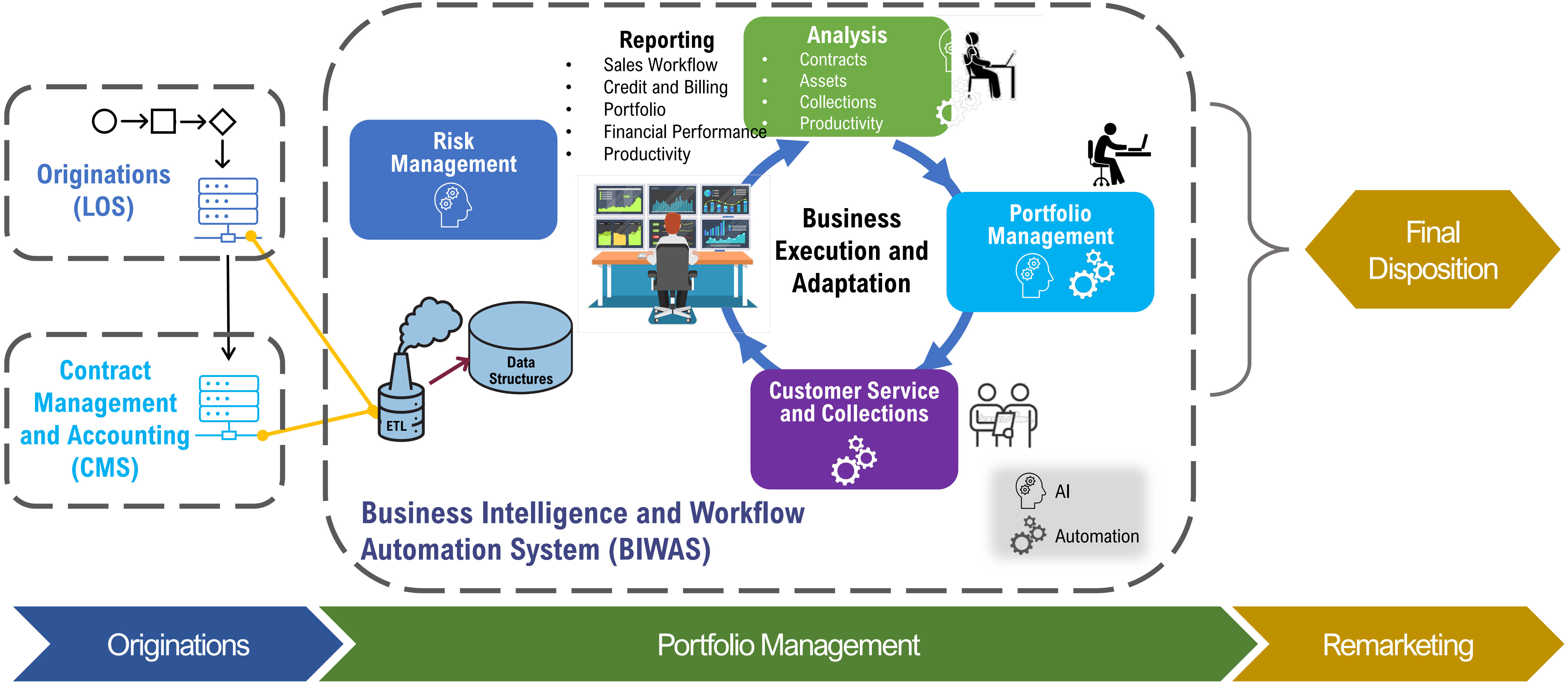
Managing Portfolio Risk



Managing Portfolio Risk: BI and AI Automation



Three systems to leverage data and AI



Innovator Examples

Data-centric culture drives growth, pace, and performance

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- Simple productivity metrics create clarity for organization.
- Time-in-stage visibility highlights bottlenecks and top performers
- Portfolio visibility enables proactive vs reactive activities – reduced loss and variability.

How? *Precision Portfolio Design*

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Customer	Credit
Irving Langmuir	C
Max Planck	C
Marie Curie	C
Hendrik Lorentz	C
Albert Einstein	C
Paul Langevin	C
Charles-Eugène Guye	C
C.T.R Wilson	C
Owen Richardson	C
Peter Debye	C
Martin Knudsen	C
William Lawrence Bragg	C
Hendrik Anthony Kramers	C
Paul Dirac	C
Arthur Compton	C
Louis de Broglie	C
Max Born	C
Niels Bohr	C

Data Category	Data Element	
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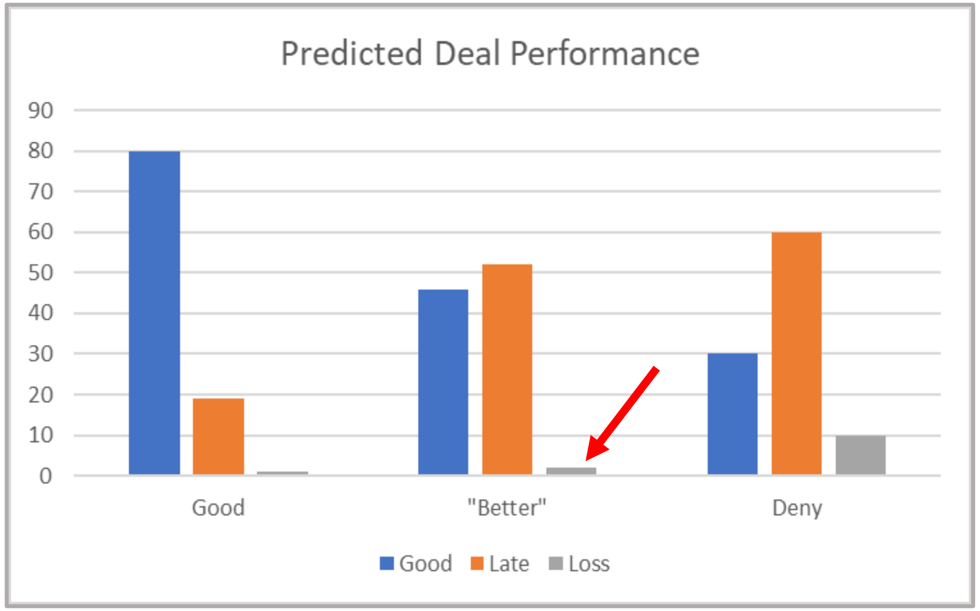
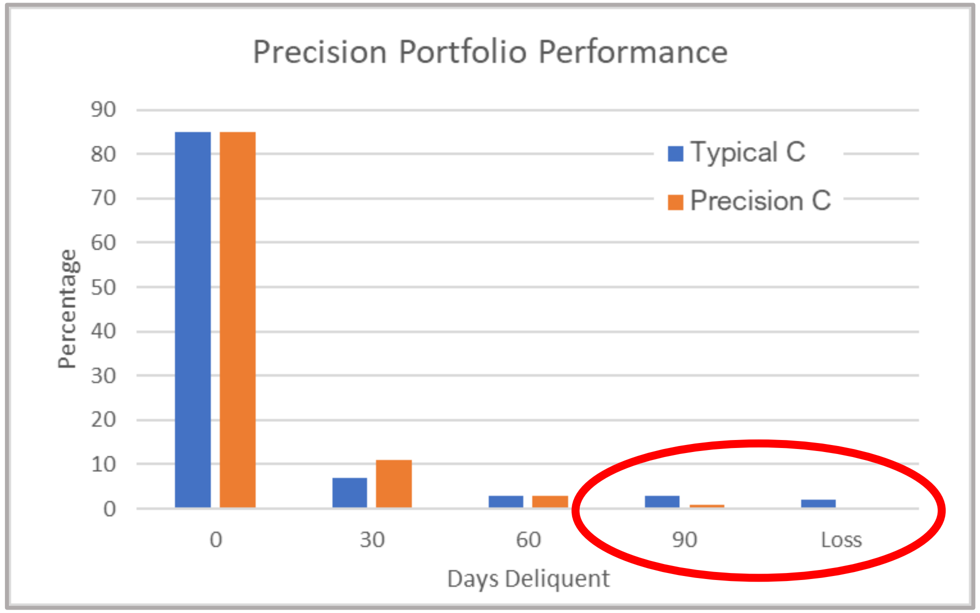
	Accrual/Non-accrual	
Financial Data	Business Size (Revenue)	★
	Business/Asset Size (Asset)	
	Income tax return (Net income)	
	Balance Sheet leverage ratio	
	Debt Coverage Ratio	
Credit Service Scores	Credit Score (FICO, personal, business)	★
	D&B Financial Ratios	
	D&B Composite Rating	
	Experian/Paynet	★
	Moody's Risk Score	
Industry	SIC/NAICS Code	★
	Business Type	★
Public Standing	Bankruptcy/Legal Action	
	Adversarial actions	

		Delinquency				
Customer	Credit	0	30	60	90	Loss
Irving Langmuir	C	1				
Max Planck	C			1		
Marie Curie	C				1	
Hendrik Lorentz	C			1		
Albert Einstein	C		1			
Paul Langevin	C	1				
Charles-Eugène Guye	C					1
C.T.R Wilson	C		1			
Owen Richardson	C			1		
Peter Debye	C	1				
Martin Knudsen	C				1	
William Lawrence Bragg	C	1				
Hendrik Anthony Kramers	C		1			
Paul Dirac	C	1				
Arthur Compton	C		1			
Louis de Broglie	C			1		
Max Born	C	1				1
Niels Bohr	C				1	

Eliminate these

Risk is the chance (probability) that an outcome will differ from that which was expected.





Not just a score. A distribution of possible outcomes drives higher returns.

Moneyball Moment: "Win more than we lose."

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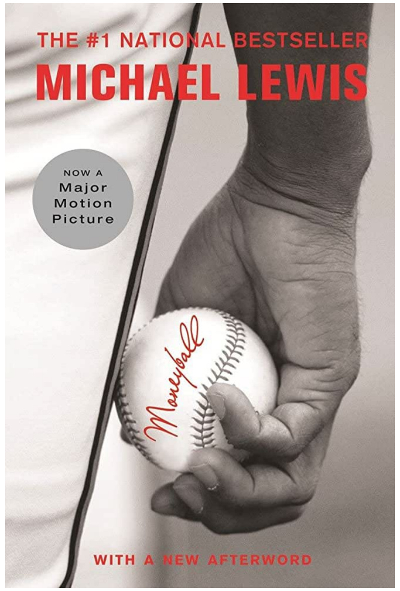
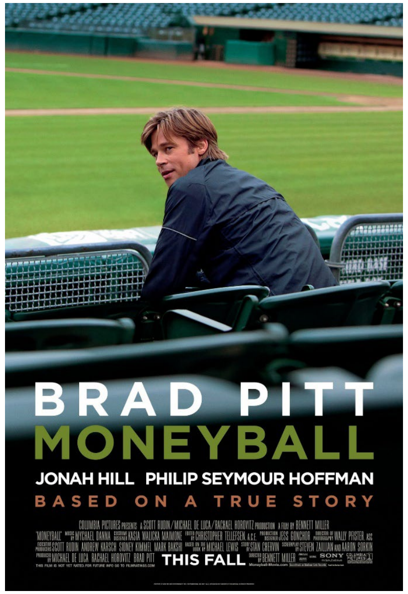


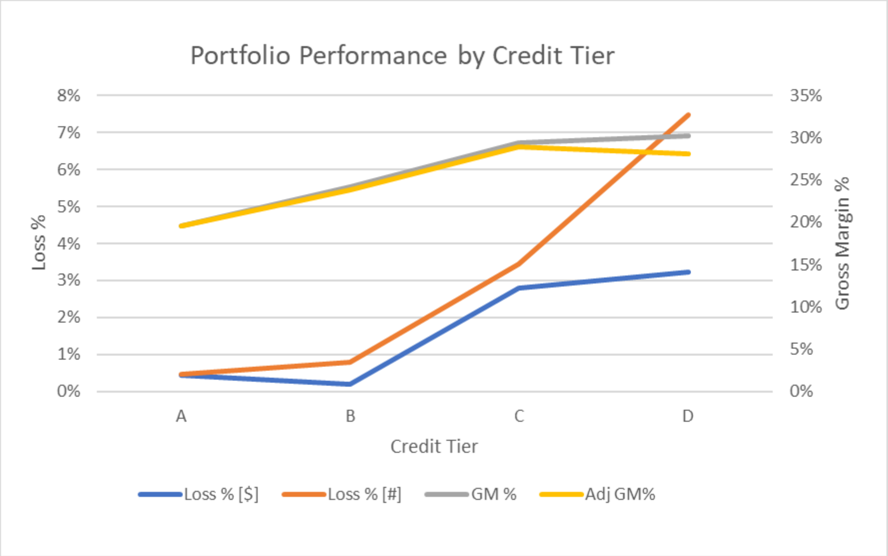


"I hate losing. I hate losing more than I love winning."

– Billy Bean

"We only do A credits."

– Bank-owned EF GM

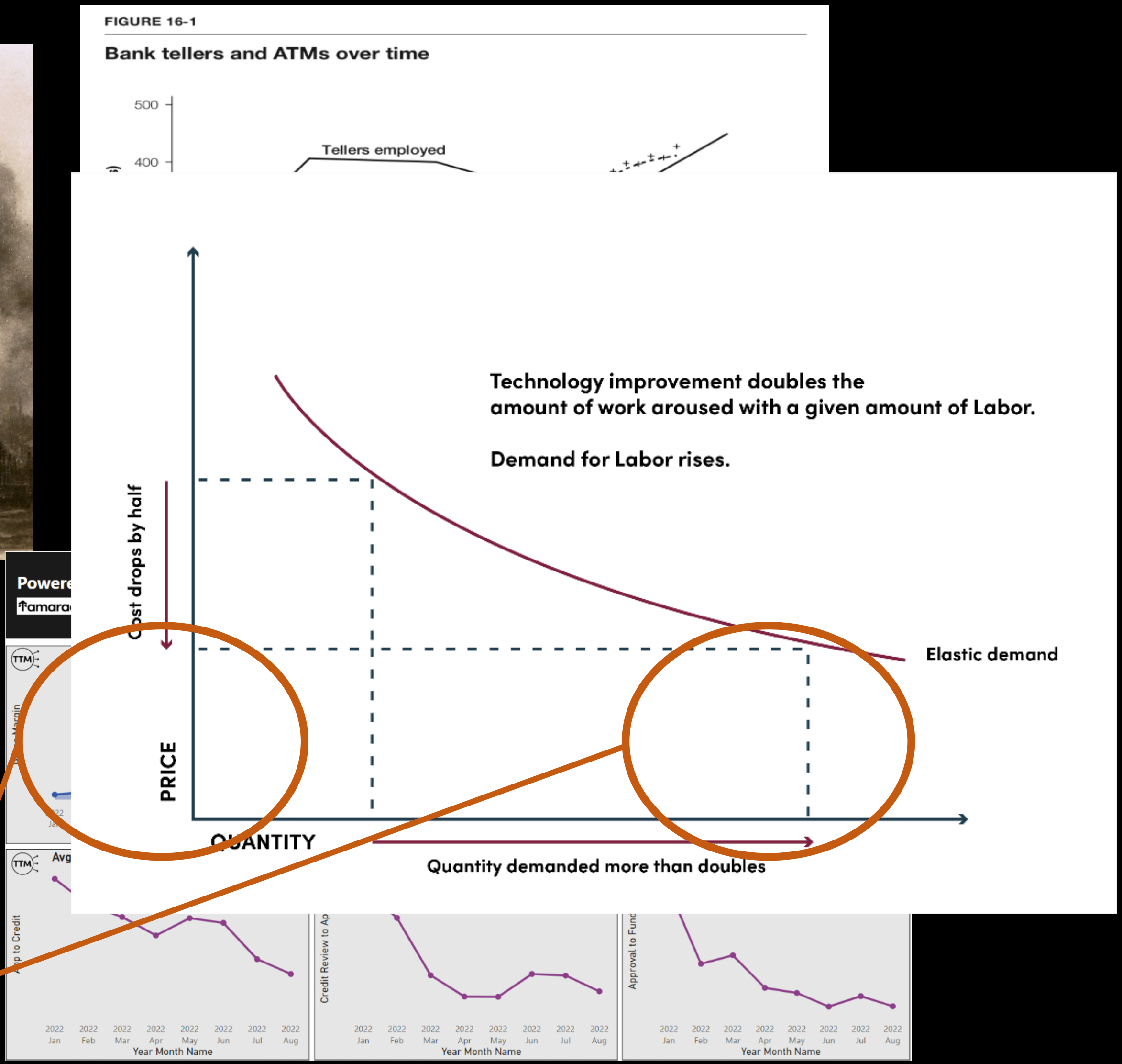


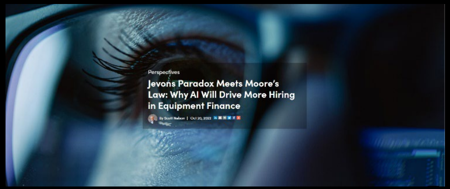
Credit Tier	FICO	# Leases	# Losses	Loss % [$]	Loss % [#]	GM %	Adj GM%
A	850-750	4947	23	0.44%	0.46%	19.6%	**19.6%**
B	749-700	3582	28	0.18%	0.78%	24.2%	23.8%
C	699-601	1978	68	2.79%	3.44%	29.4%	**29.0%**
D	<600	347	26	3.23%	7.49%	30.3%	28.1%

Adjusted GM% vs Loss % shows value of "Win more than we lose"

Jevons' Paradox: Get ready to hire.

William Stanley Jevons
1835 –1882



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Naturally intelligent financial data

Thank You

Scott Nelson
Tamarack Technology, Inc.
snelson@tamarack.ai

Example: Transformation with Data

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1. Start capturing the data you need and generate now – CRM
2. Add LOS software to integrate with partners and capture the data you need in the future (LOS).
3. Add BI and AI to improve productivity AND document success for next steps.
4. Use data to provide "proof of efficacy" for funding partners
5. Begin servicing with outsource partners