Data Analytics, Machine Learning and AI

Jim Collins - IBM

The unprecedented challenges for Finance, driven by change, requires CFOs to digitally reinvent their organizations

Business Risk and Volatility

Increasing

Considerations

- Accelerating business change:
  - New competitors
  - Changing business models
  - Changing customer expectations
- Arising from:
  - Disintermediation
  - Virtualization
  - Technical innovation

Business Expectations of Finance

Changing

Proactively manage business growth and risk

- Advanced, predictive analytics
- Input to business strategy
- Meaningful business partnership & alignment
- Curate and integrate enterprise data

Challenges for Finance

Unprecedented

Master digital skills and disciplines

- Data and analytics
- Strategic partnership
- Re-invention of processes, organization and technology

Balance the accounting mandate

- Timely, accurate regulatory reporting
- Business controls
- Transaction processing

Do it now – and do it for less

- Reduce Finance functional costs below 1% net revenues

Imperatives for Finance

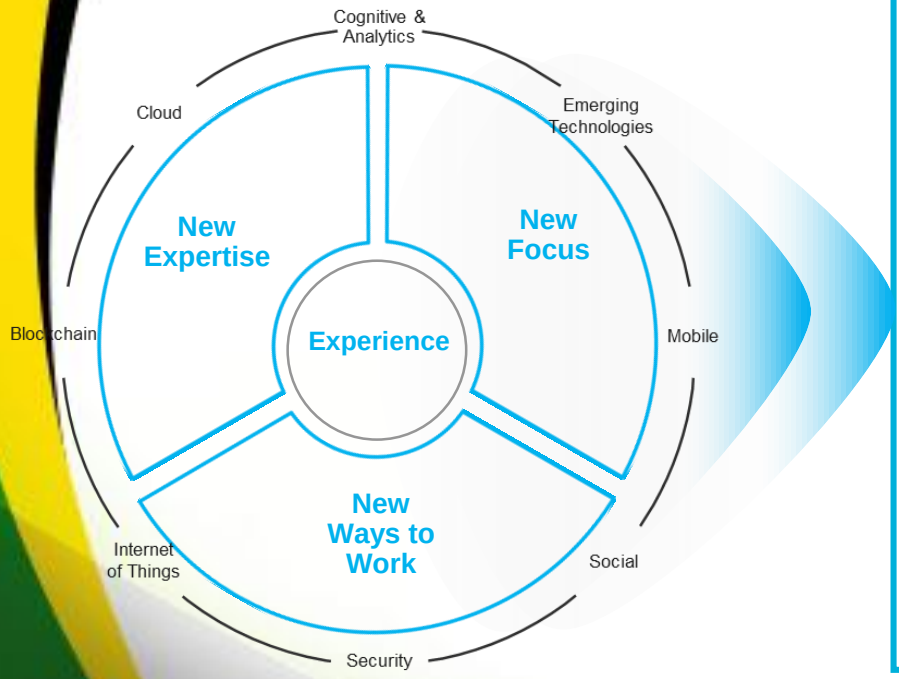
Urgent

Continual reinvention – the new normal

- Scalable, flexible operating model
- A “new contract with technology”
- Rebalance the services portfolio – transform the basics
- Fundamental skillset shifts
- Shrink the core
- New philosophy of data
  - Periodicity
  - Broader definitions
  - Visualization

Time is not on the side of the CFO

Finance organizations need to embrace digital drivers



New focus: Employ advanced analytics across the enterprise

New expertise: Build the right talent for an agile and innovative organization

New ways to work: Digitize services and processes

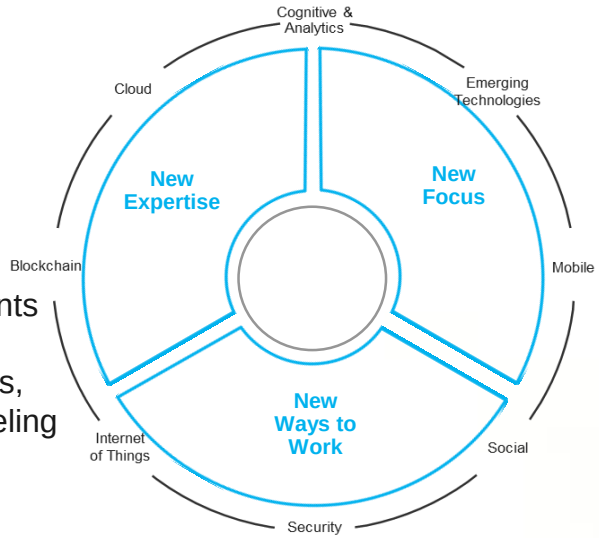
New experiences: Create deeper relationships that business partners desire and want and build experiences that employees desire and want

The most effective Finance organizations digitally reinvent through new focus, new ways to work and new expertise

Digital Reinvention of Finance

New Expertise

- Center of excellence for analytics/cognitive computing
- Management of change associated with Digital Reinvention
- Culture and talent improvements to support digital
- New skills around technologies, data acquisition, mining, modeling and analysis



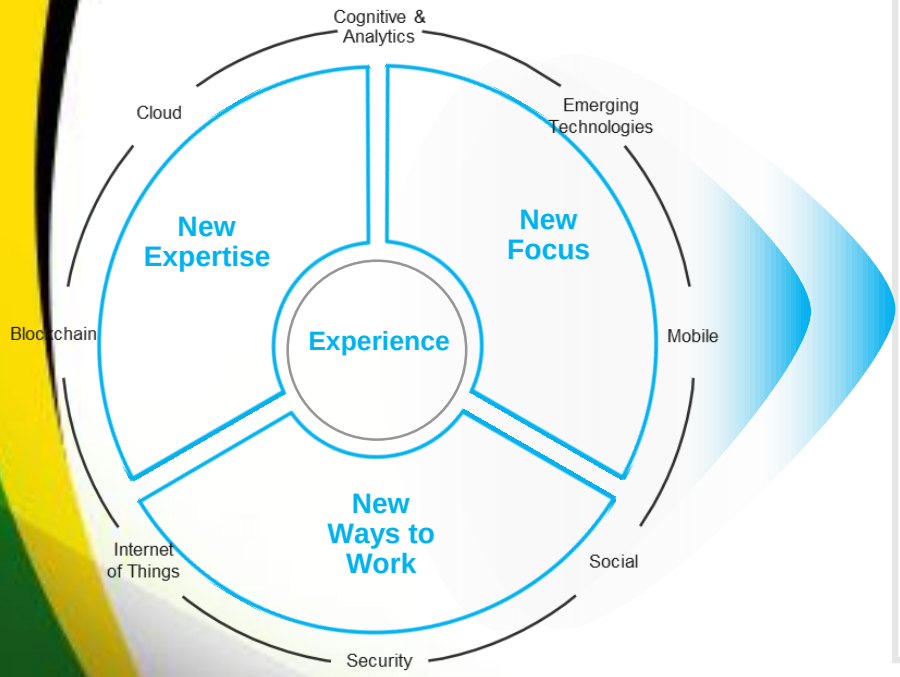
New Focus

- Enterprise data commonality
- Predictive models
- Connection of front and back office
- Application of analytics and cognitive computing to enterprise decision making for profitable growth

New Ways to Work

- Digital technology foundation
- Analytics, cognitive computing, process automation and blockchain for processes
- Leading practices for order-to-cash (O2C), procure-to-pay (P2P), record-to-report (R2R) processes

Finance organizations need to envision, create, deepen and orchestrate



Envision: Use design thinking to understand business partners, brainstorming ideas and visualizing scenarios

Create: Create pilots using agile development, test them, and deploy them

Deepen: Augment capabilities and continue to build and deploy applications aligned to the target operating model and strategy

Orchestrate: Build a robust team to guide the program, and ensure embrace of holistic reinvention, not a series of point solutions

Pressure is on for Finance organizations to digitally reinvent

1	Long-term, incremental transformation no longer sufficient	Finance should rapidly transform cost structures and allocate more resources to digital technologies and capabilities.
2	Business as usual does not change the thinking about data and being analytically nimble	Finance should address the pace of innovation, data complexity / volume growth and business expectations through the integration of data.
3	No sacred cows - nothing is off the table	Finance should objectively evaluate all transformation levers with shift to digital.

Capabilities Needed to Modernize Your Data Strategy

- Make Data Simple and Accessible
- Build a Trusted Analytics Foundation
- Scale Insights On Demand

Make Data Simple and Accessible

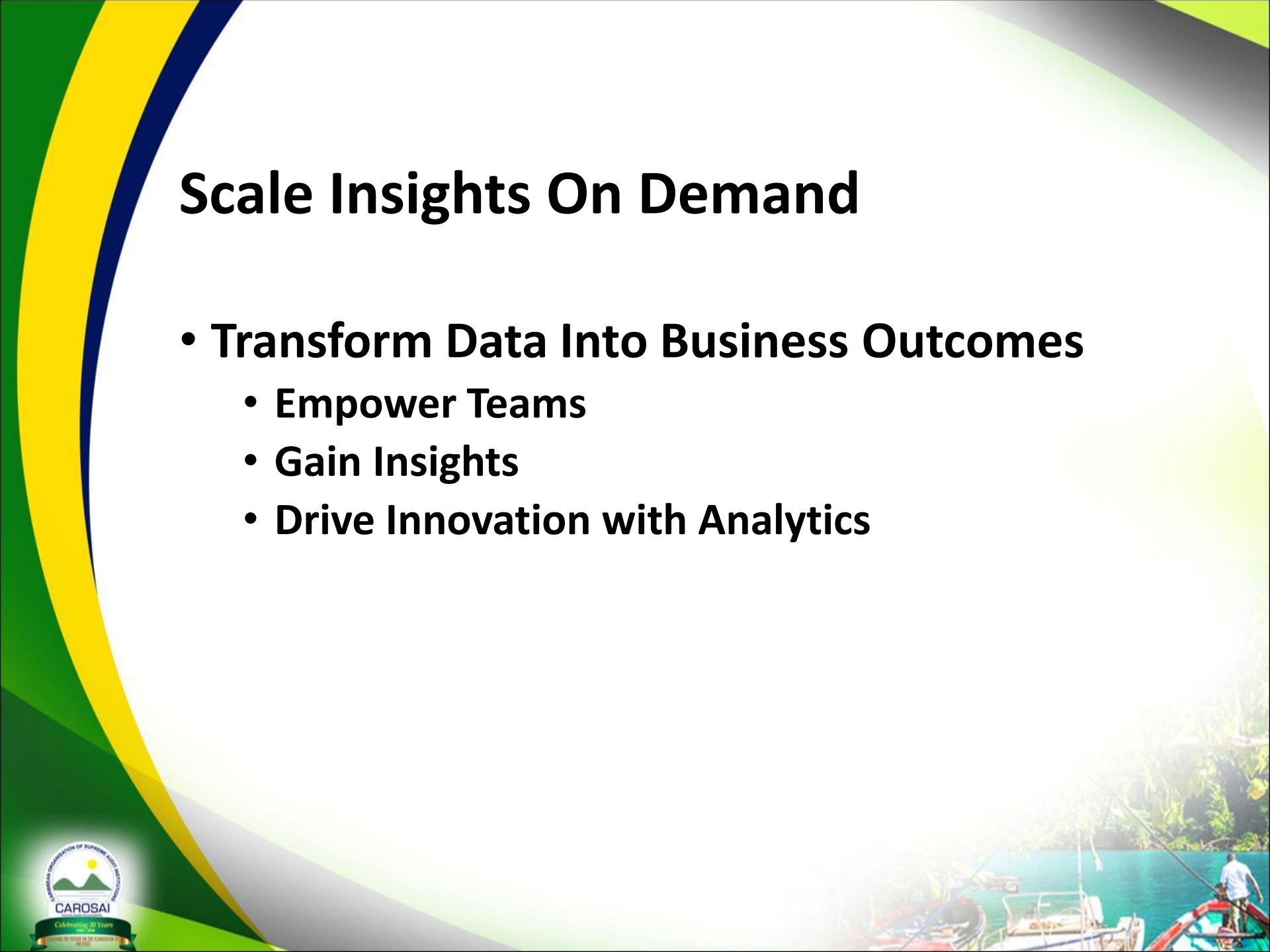
- **Gain Value From Your Data Without Limits**
  - **Adapt current data management to changing business needs**
  - **Leverage data of all types and sources with hybrid data**
  - **Embrace open source technologies and data more securely**

Build a Trusted Analytics Foundation

- **Know Your Data, Trust Your Data, Use Your Data**
  - **Build confidence in your data**
  - **Data integration, replication and quality**
  - **Enable information driven insights**

Scale Insights On Demand

- Transform Data Into Business Outcomes
  - Empower Teams
  - Gain Insights
  - Drive Innovation with Analytics



Data Science and Business Analytics makes data simple, accessible and actionable

Descriptive, Diagnostic, Predictive, Prescriptive to plan a course, monitor the business, predict the future, and change the outcome

Grow Revenue

Grow, Retain, and Satisfy Customers

Better understand customer behavior

Reduce Cost

Increase Operational Efficiency

Streamline operations

Mitigate Risk

Mitigate and Manage Risks

Identify high risk signals

Drive Innovation

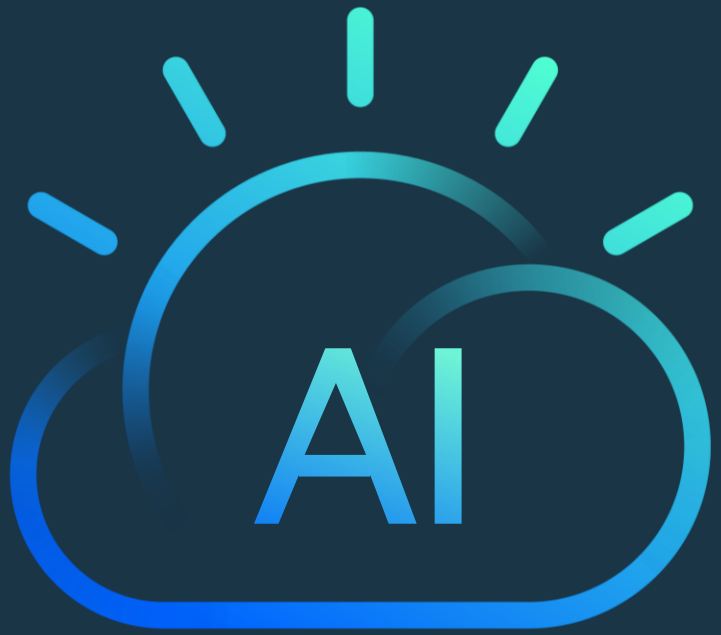
Drive Innovation with Analytics

Validate business decisions with data

Cognitive businesses will redefine how decisions are made

AI is the system of the future.
People will define what is to be learned.
System will learn how to learn it.

- Interactive decision making, learning and evidence-based explanations
- A range of techniques including natural language processing, knowledge and planning
- Statistical prediction analysis and pattern recognition to make highly data-driven decisions



Bringing together **man and machine** to help us make better, smarter decisions.

Humans excel at

Common Sense

Dilemmas

Morals

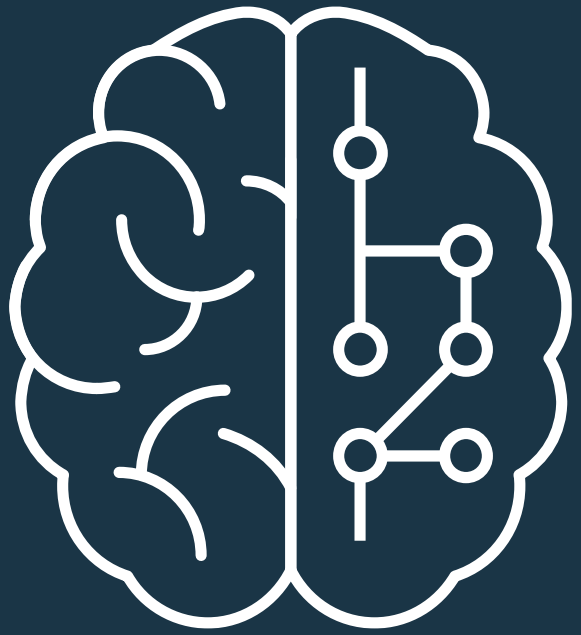
Compassion

Imagination

Dreaming

Abstraction

Generalization



AI Systems excel at:

Pattern Identification

Locating Knowledge

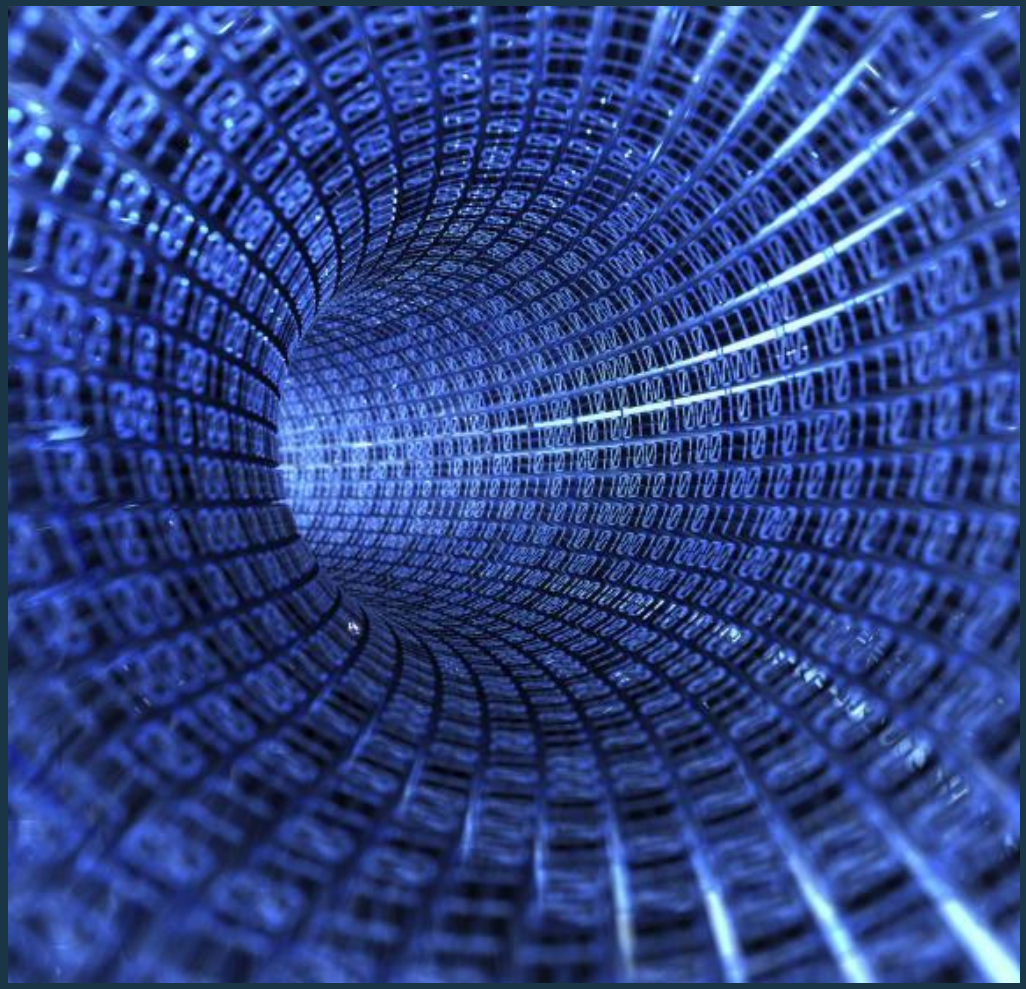
Machine Learning

Eliminate Bias

Endless Capacity

Natural Language Understanding

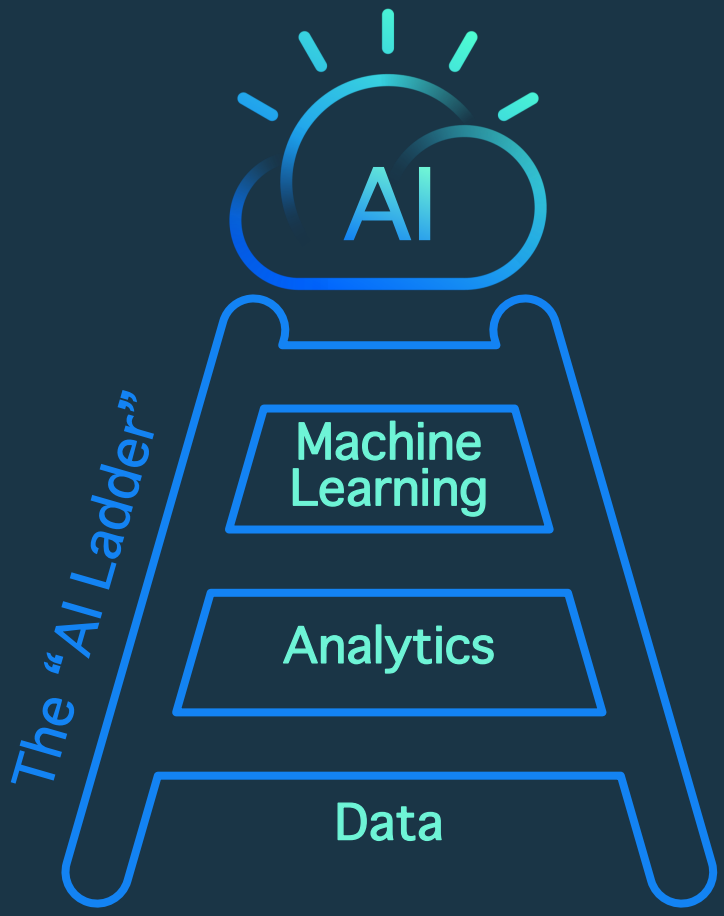
Today’s world is data rich but insights poor



Focus and Plan

Build a Data Strategy

Utilize Proven Architectures



How Companies Work

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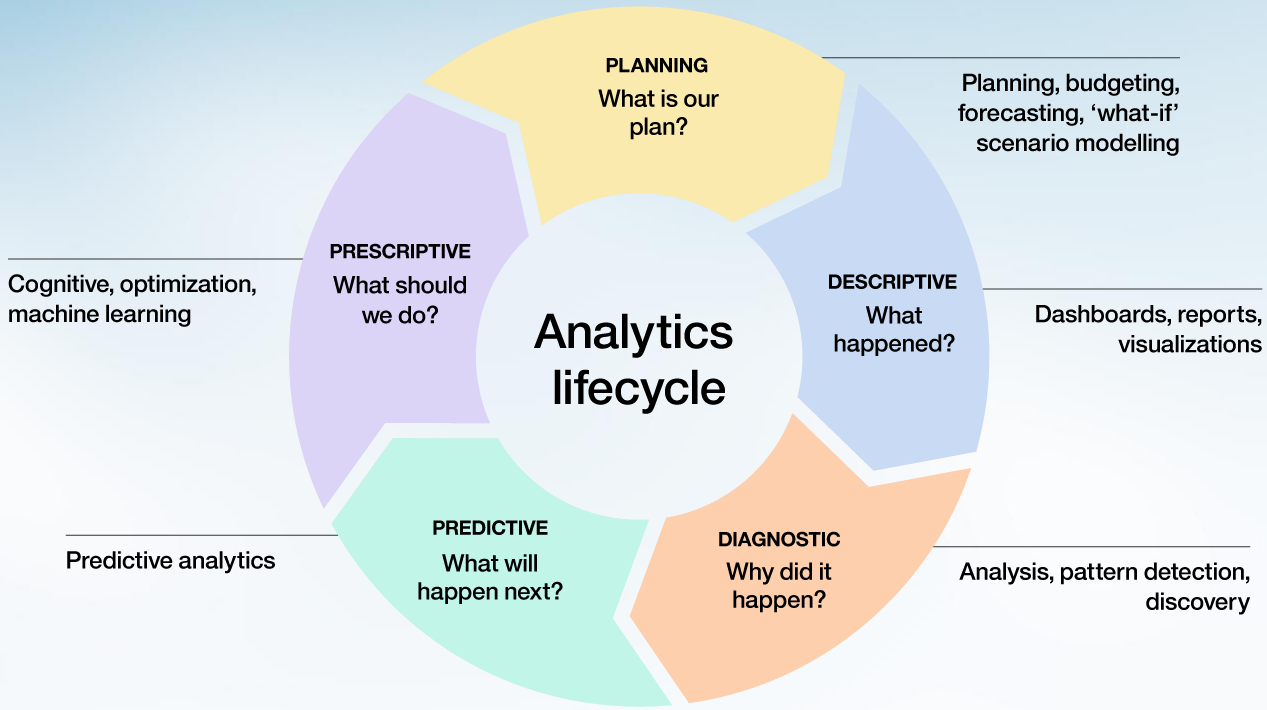

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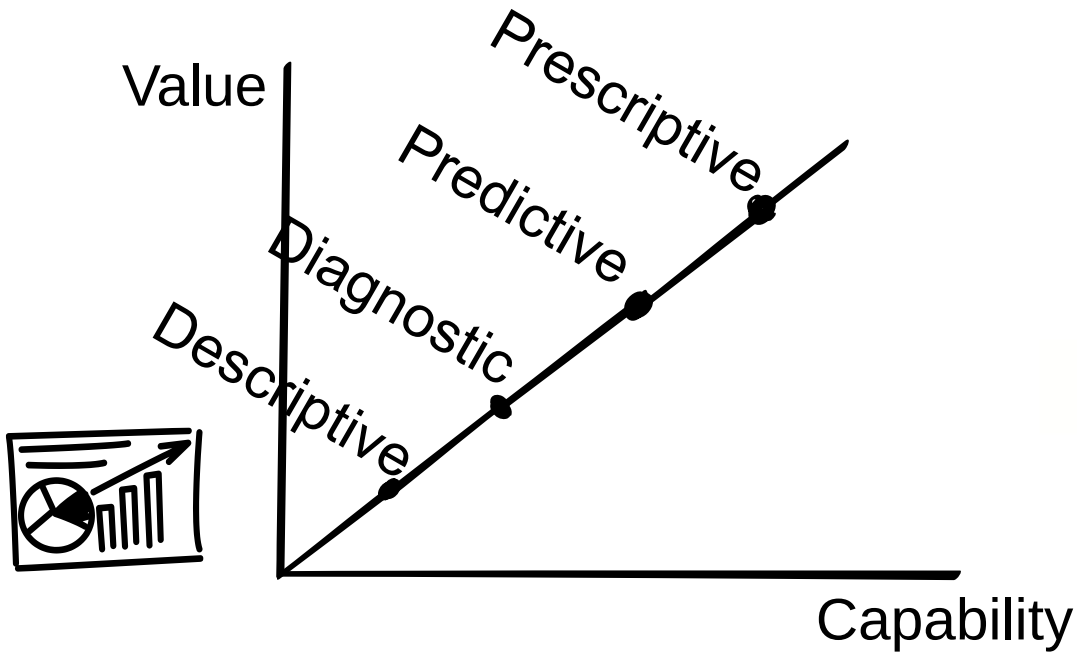
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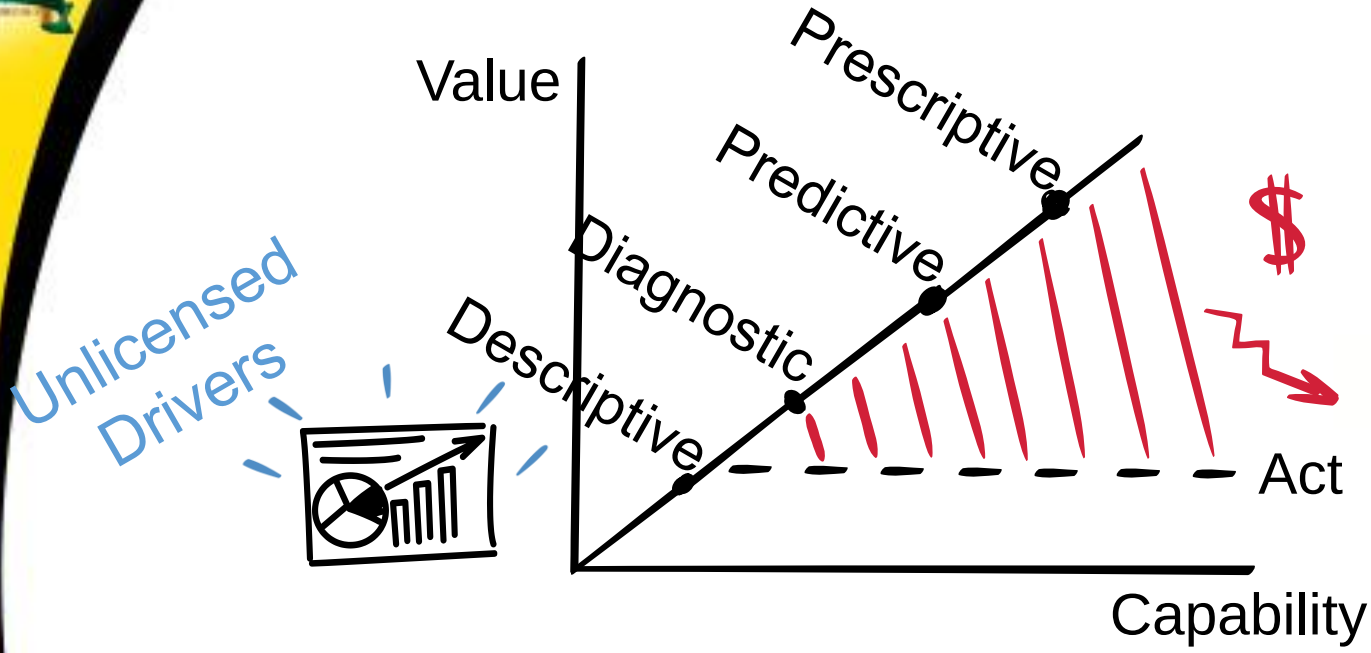
Prescriptive
Predictive
Diagnostic
Descriptive
Capability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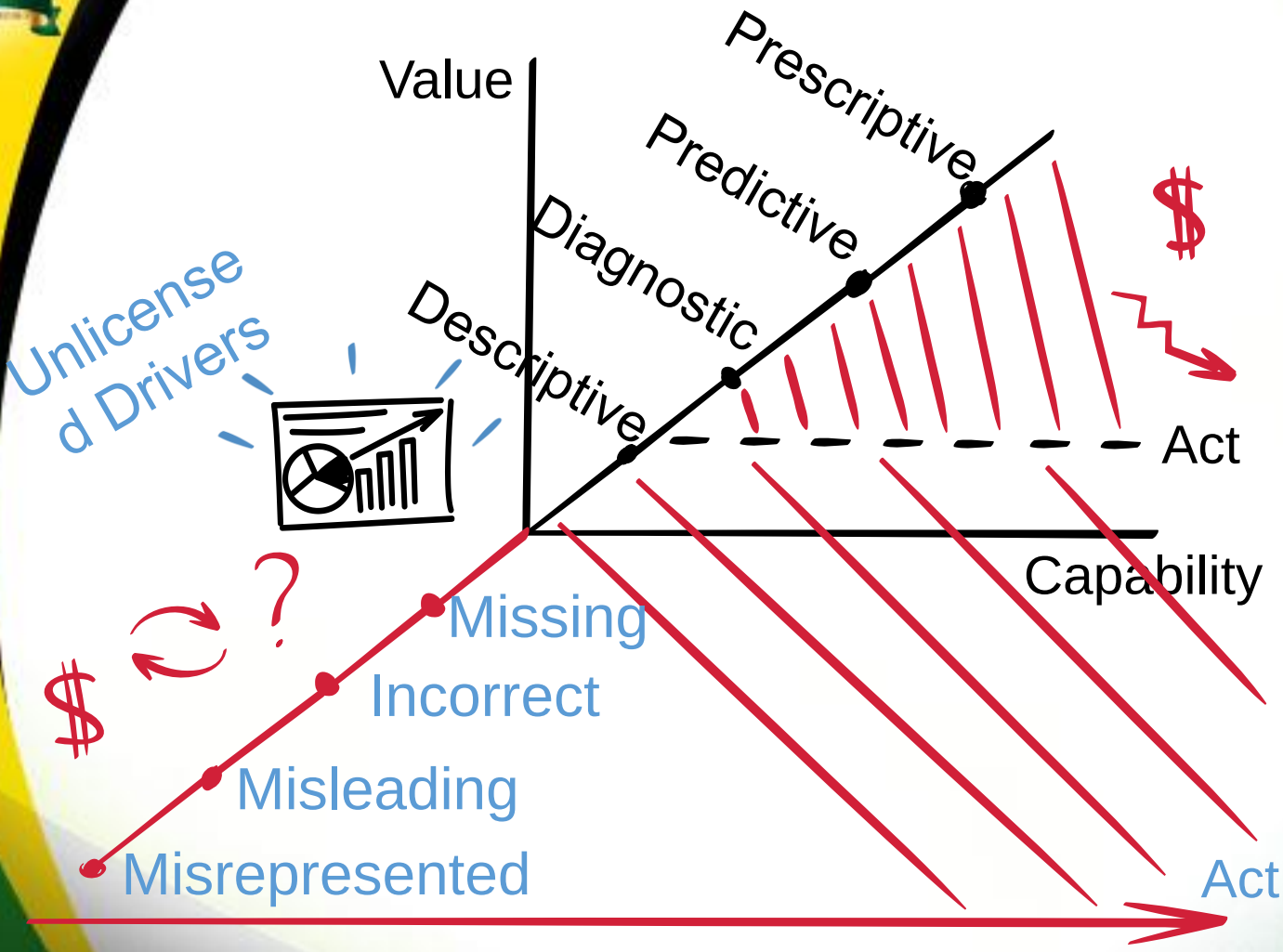
Capability
Unlicensed
Drivers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Missing
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Misleading
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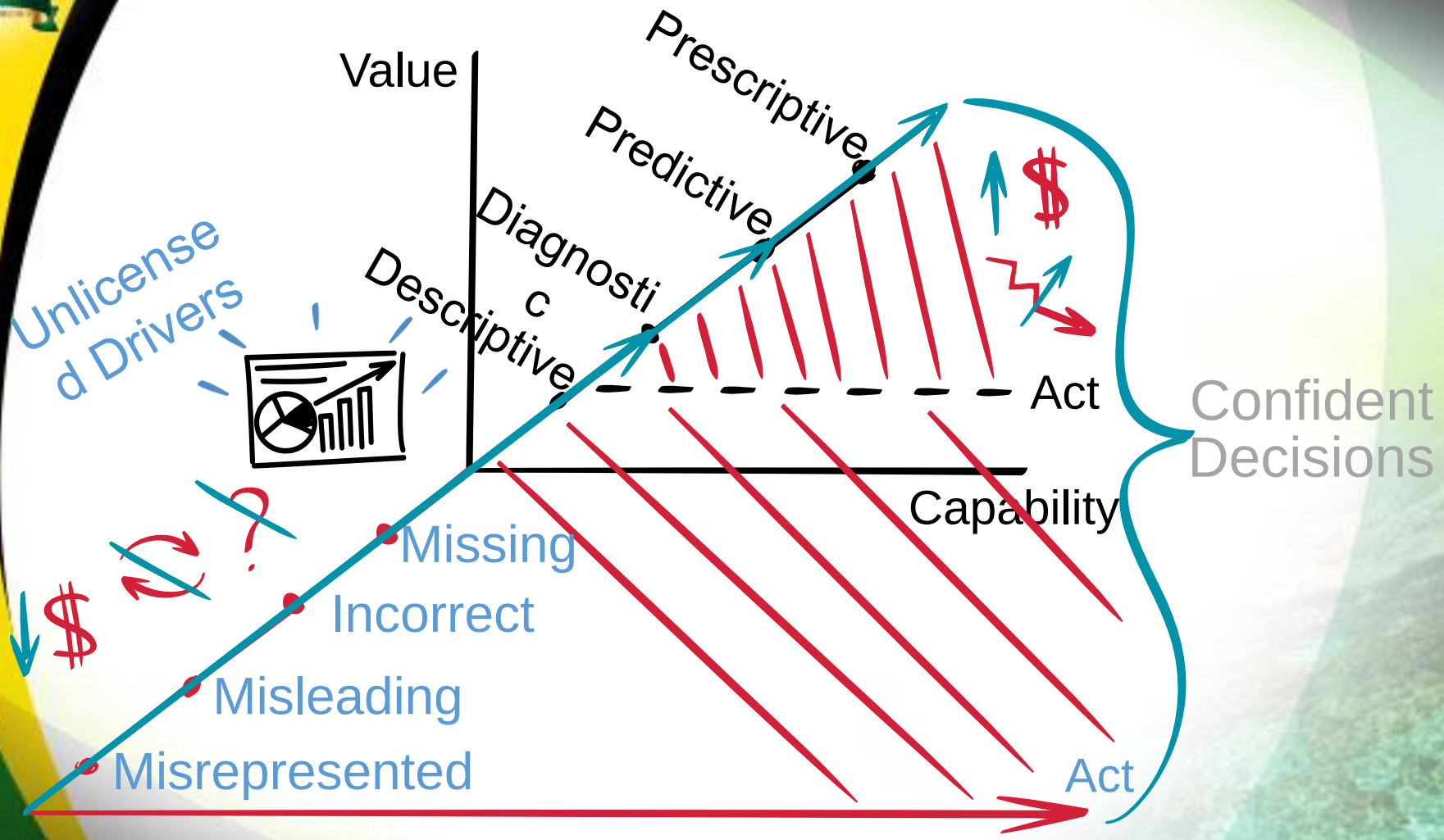
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Descriptive
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d Drivers
Act
Capability
Confident
Decisions
Missing
Incorrect
Misleading
Misrepresented
Act

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1 ***Missing data***

2 ***Incorrect data***

3 ***Misrepresented data***

4 ***Misleading data***

99% say their firms are trying to become insights-driven,

but only one-third report succeeding

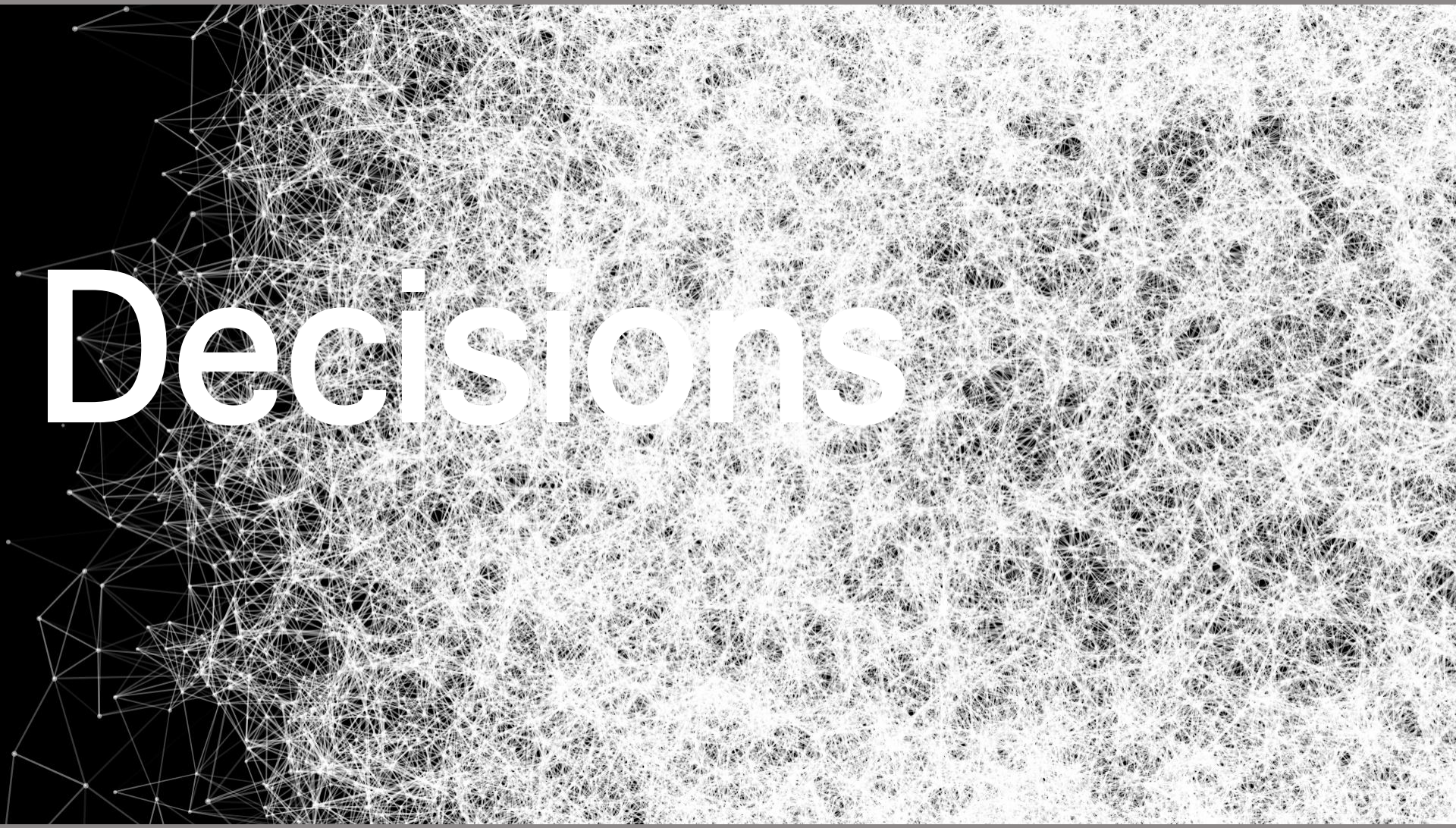
NewVantage Partners,
"Big Data Executive Survey 2018 Executive Summary of Findings"

“Since 2000, 52% of the Fortune 500 have either gone bankrupt, been acquired, or ceased to exist. “

Capgemini Consulting,
“When Digital Disruption Strikes:
How Can Incumbents Respond?”

“In 2017, we saw some major businesses across Canada and around the world fail, while others have entered the market in business areas and locations where Co-op operates.”

Dusty MacDonald,
President/Chair of the Board
Federated Co-Operative Limited
2017 Annual Report


Decisions

DIRECTORY
GOVERNANCE
YOU ARE HERE
PREDICTIVE
YOU ARE HERE
DATA
YOU ARE HERE
SKILLS
INSIGHT
FORESIGHT
DESCRIPTIVE

Your data has outgrown the analytics capacity of your average business user.

Governance

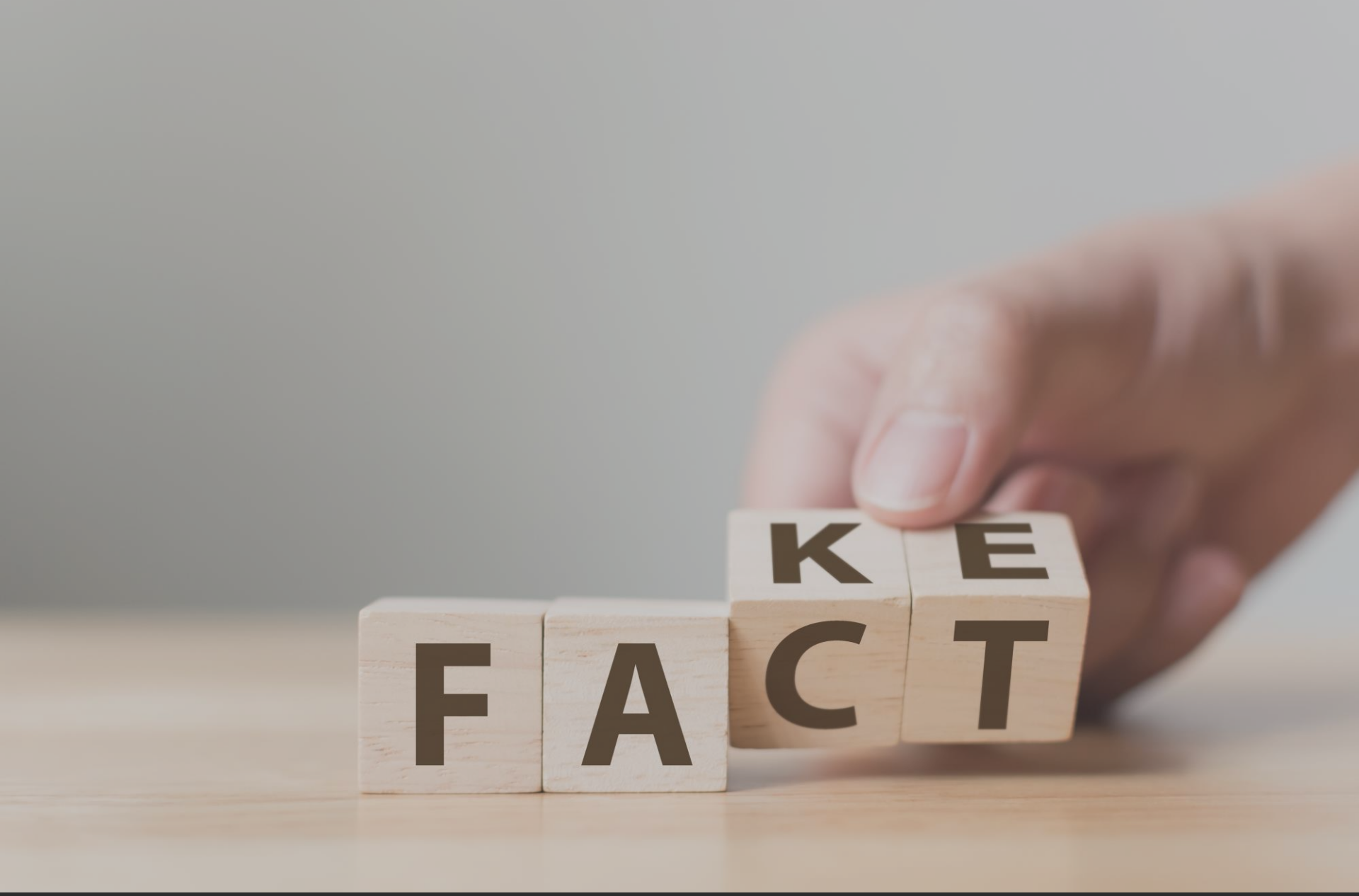
LOCK
FRT-50
FIRST

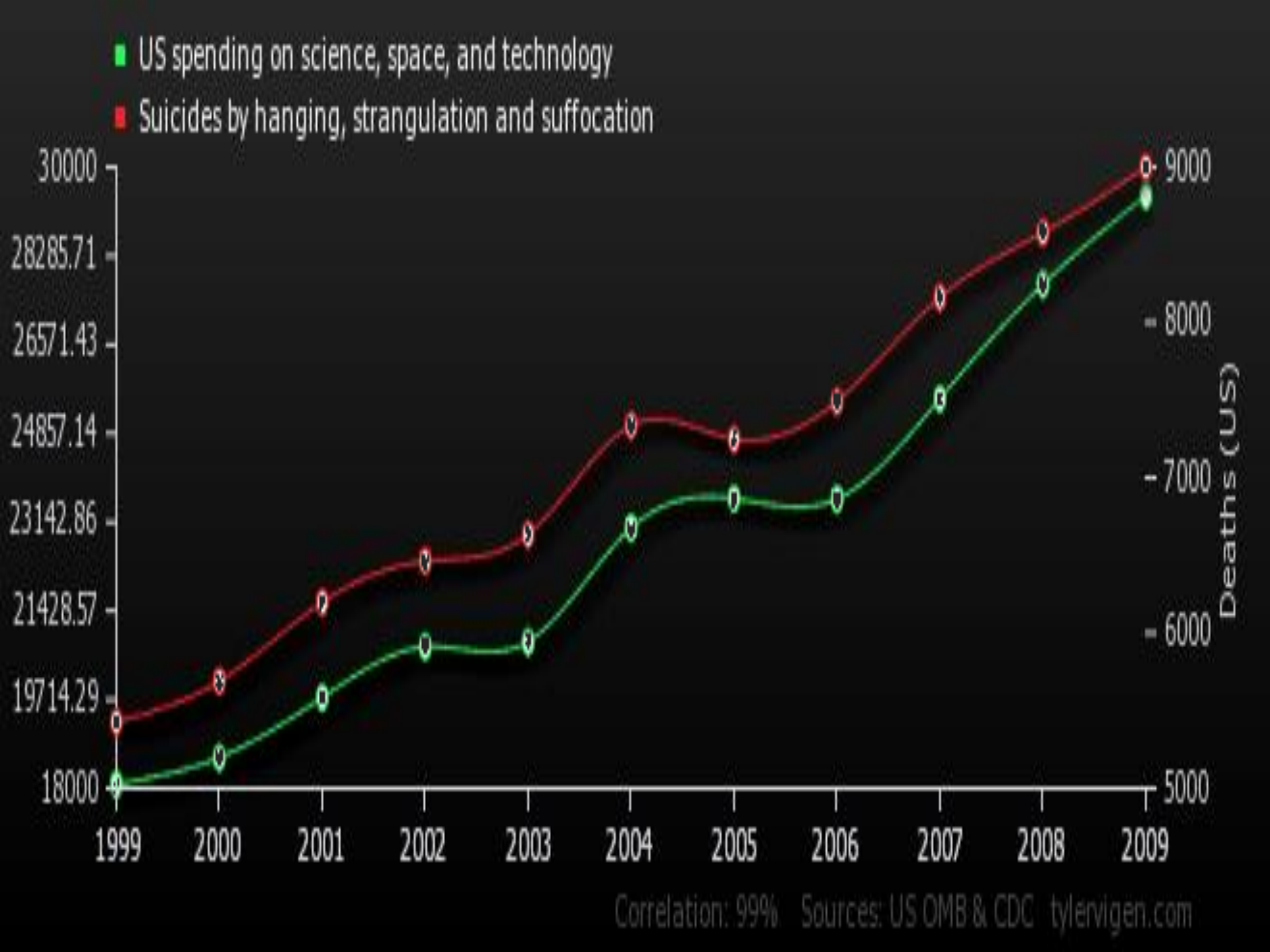
$24.7 M
Revenue
$18.63 M
Revenue

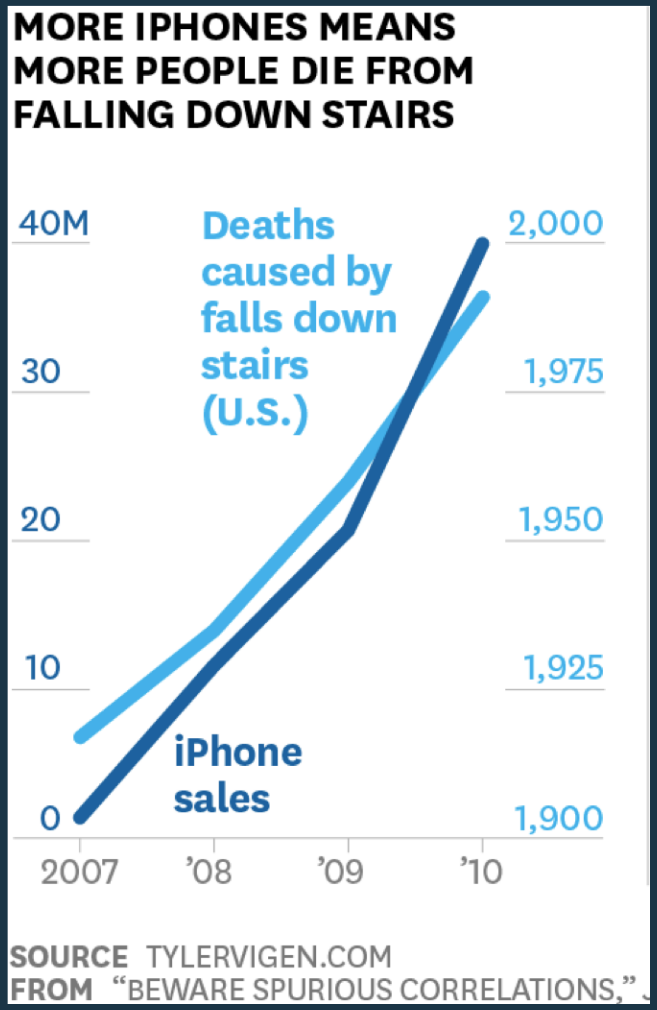
Analytics governance must be in place to ensure executives are making decisions based on true, accurate, & consistent information

Skills

Visuals masquerade as evidence


FAKE
FACT


US spending on science, space, and technology
Suicides by hanging, strangulation and suffocation
30000
28285.71
26571.43
24857.14
23142.86
21428.57
19714.29
18000
9000
8000
7000
6000
5000
Deaths (US)
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Correlation: 99%
Sources: US OMB & CDC
tylervigen.com



Dashboards are a common interface to analytics for most users.

"The greatest danger in using ungoverned dashboards for decision making is in misattributing causality when comparing elements on the dashboard"

Joel Shapiro, "Three Ways Data Dashboards Can Mislead You" – Harvard Business Review
http://www.tylervigen.com/spurious-correlations

Three Ways Data Dashboards Can Mislead You

- Harvard Business Review

“The greatest danger in using dashboards for decision making is in misattributing causality when comparing elements on the dashboard”

Three Ways Data Dashboards Can Mislead You

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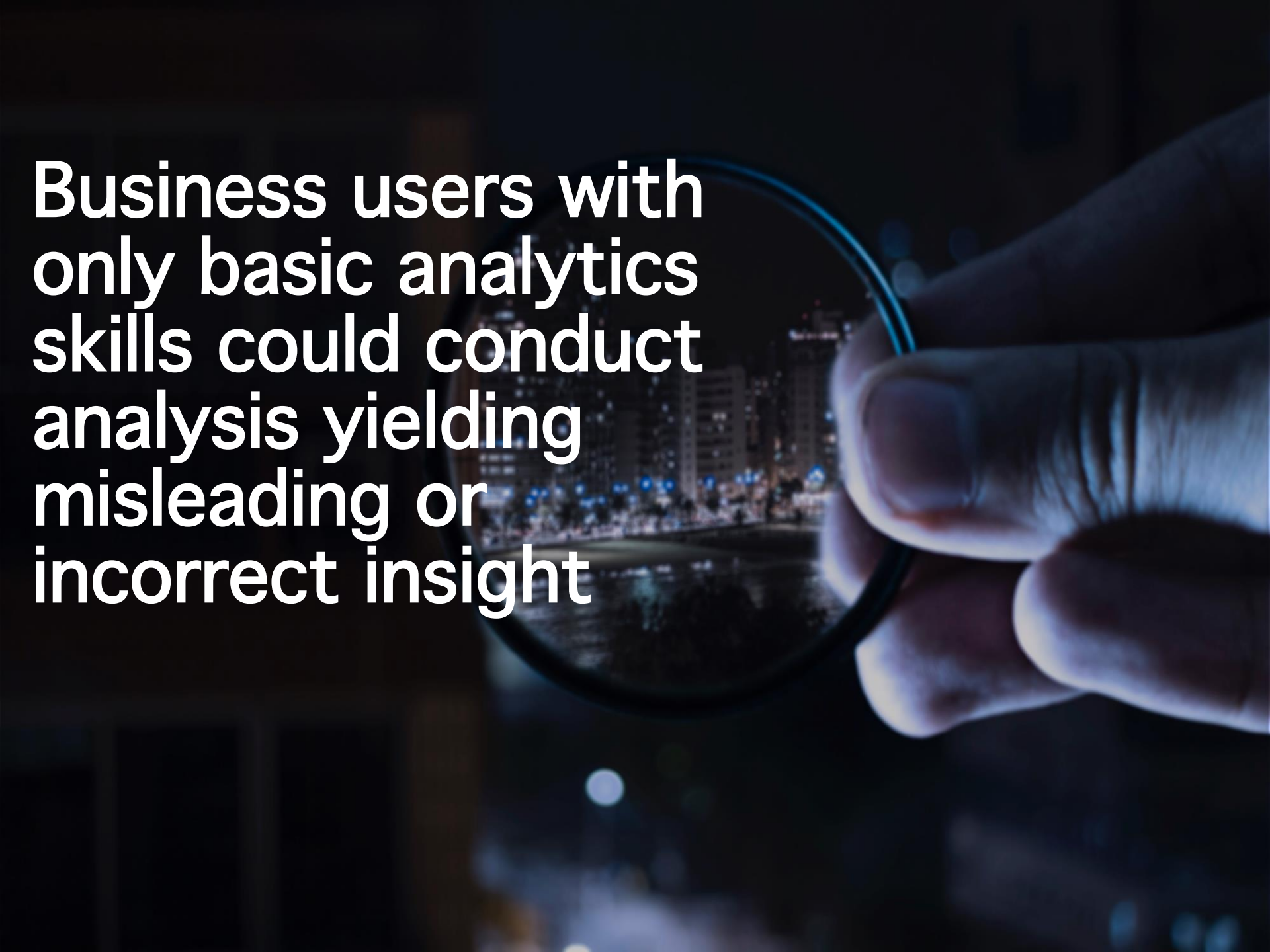

Business users with only basic analytics skills could conduct analysis yielding misleading or incorrect insight

“Today’s BI technologies are hitting the wall with how to interpret rich data visualizations.”

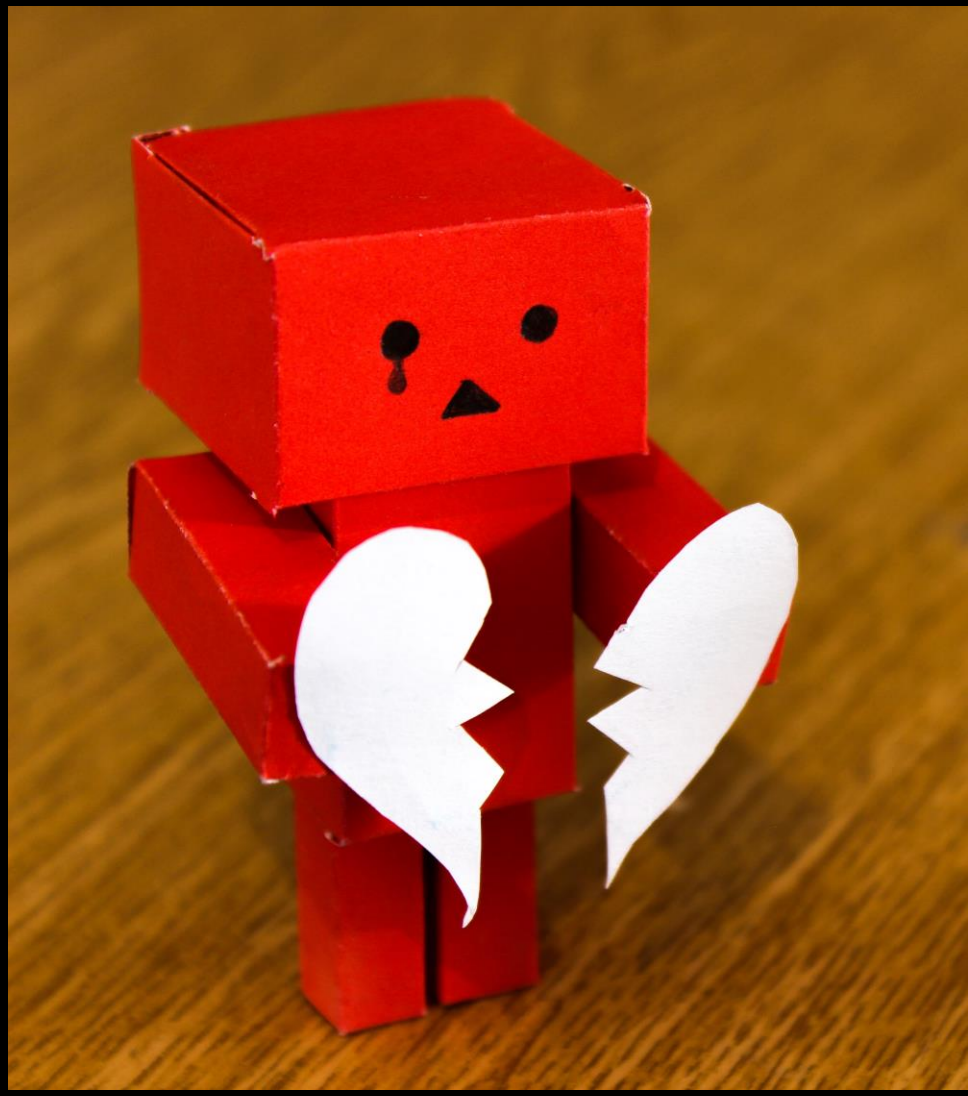
- AI Unlocks The Business Intelligence In BI Forrester Research

Data Science

Only 13% of
data and analytics
projects reach
completion,

and of those that do,
only 8% of company
leadership report being
completely satisfied
with the outcome.

--CIODive

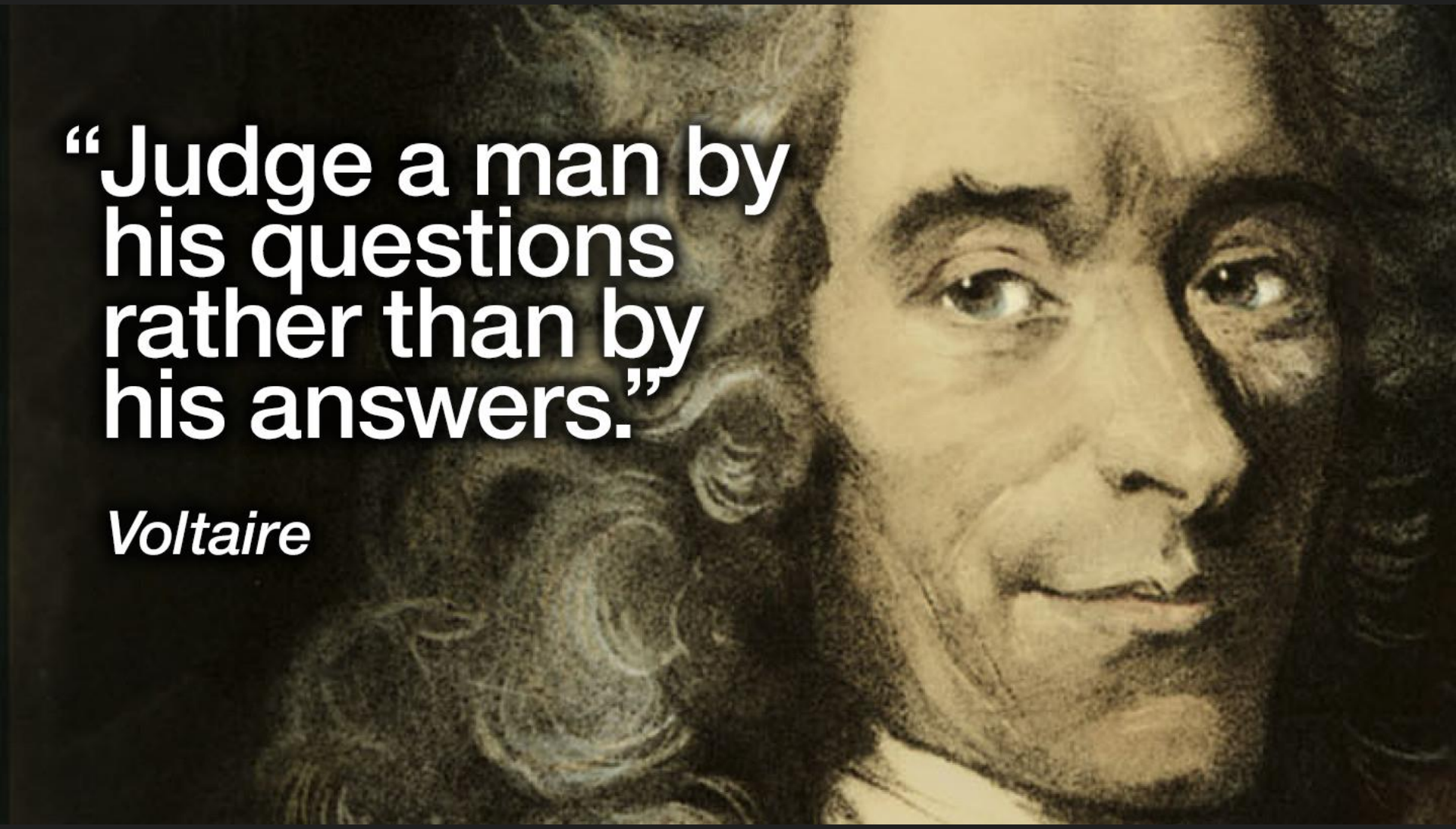


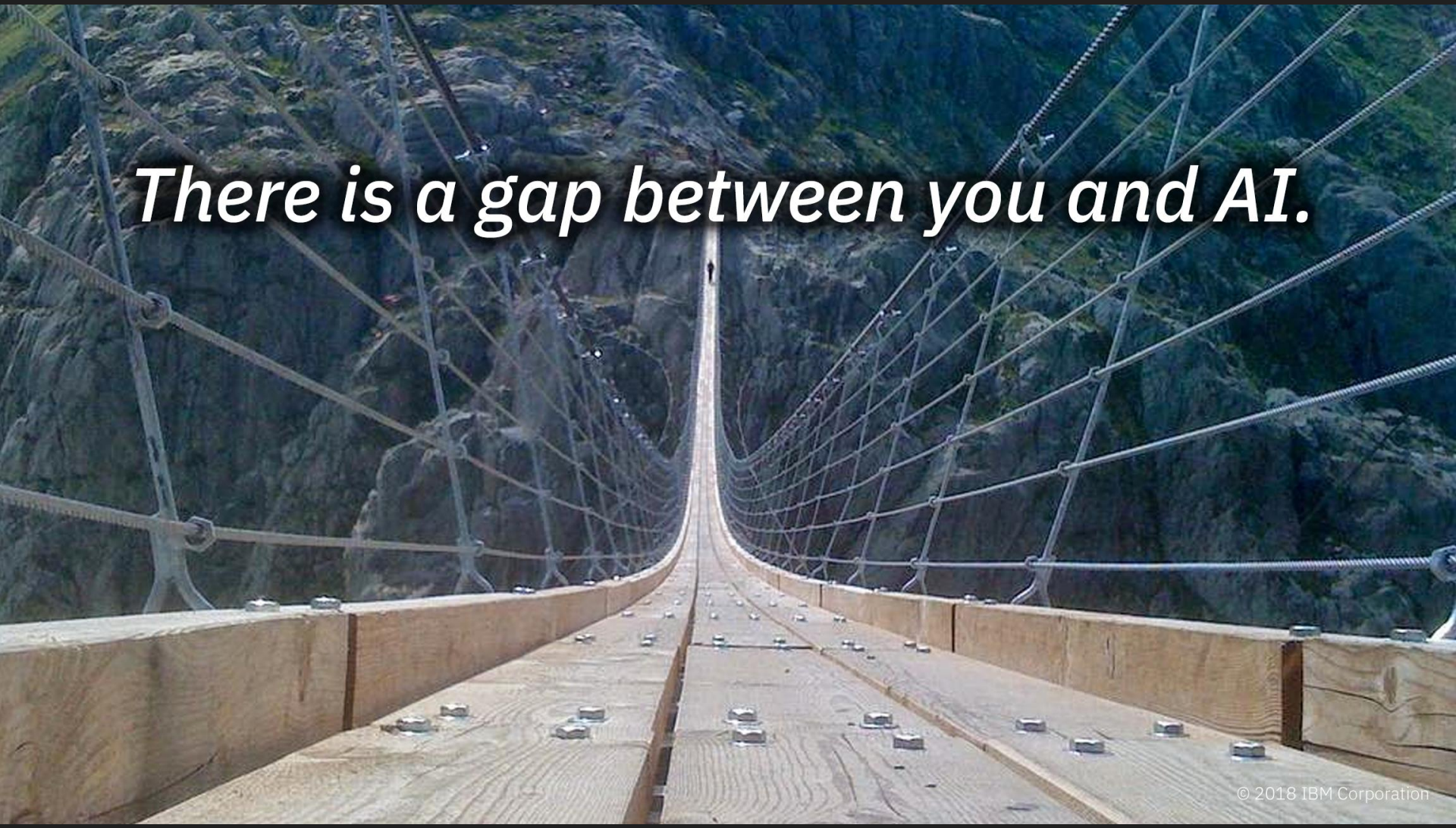
Start with the end in mind.

Machine Learning

THIS ISN'T ABOUT
SEARCHING FOR
BETTER
ANSWERS

IT'S ALL ABOUT
SEARCHING FOR
BETTER
QUESTIONS


“Judge a man by his questions rather than by his answers.”
Voltaire



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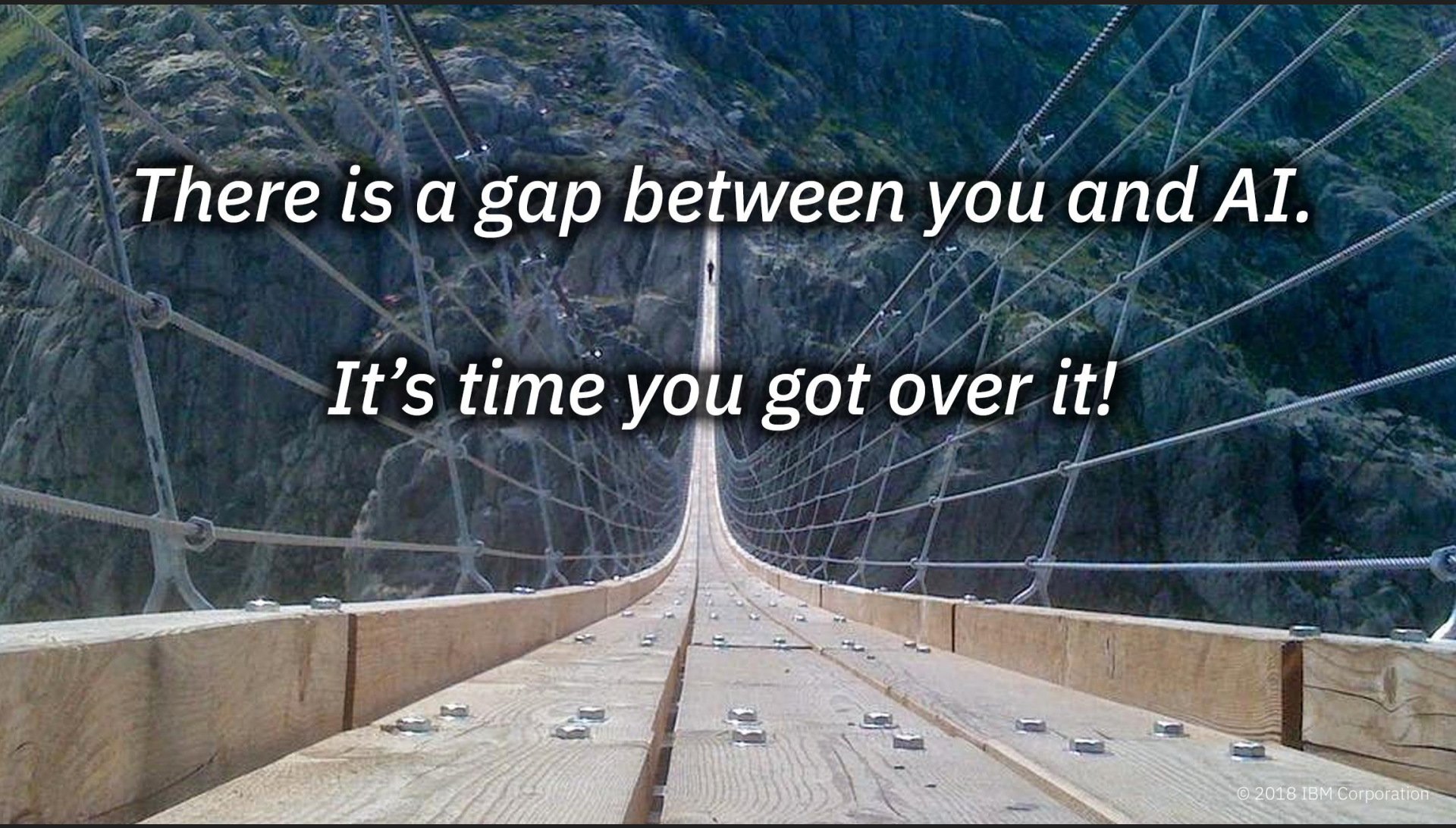

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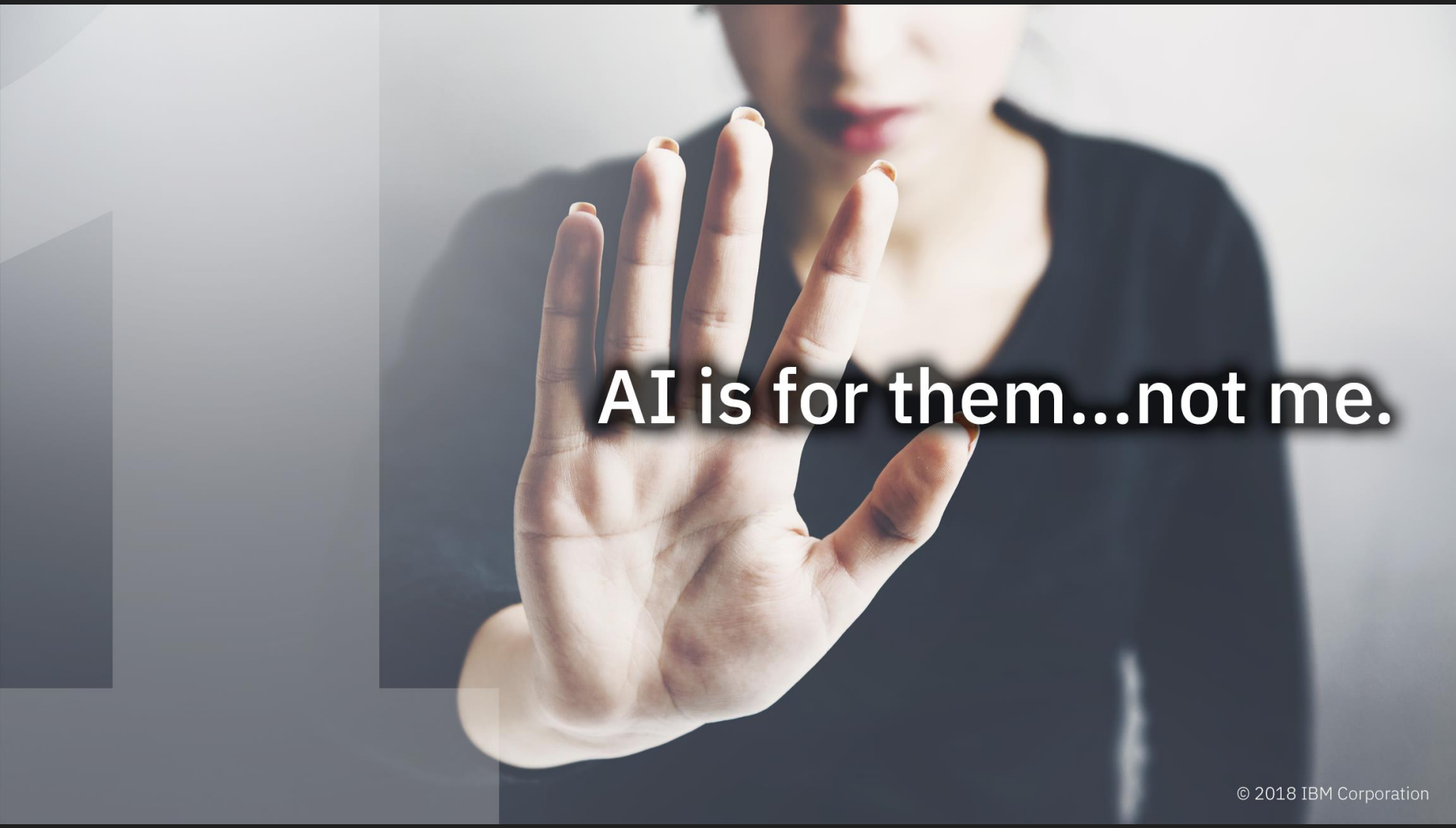
Four misconceptions
GLOBAL MAP
Application Form



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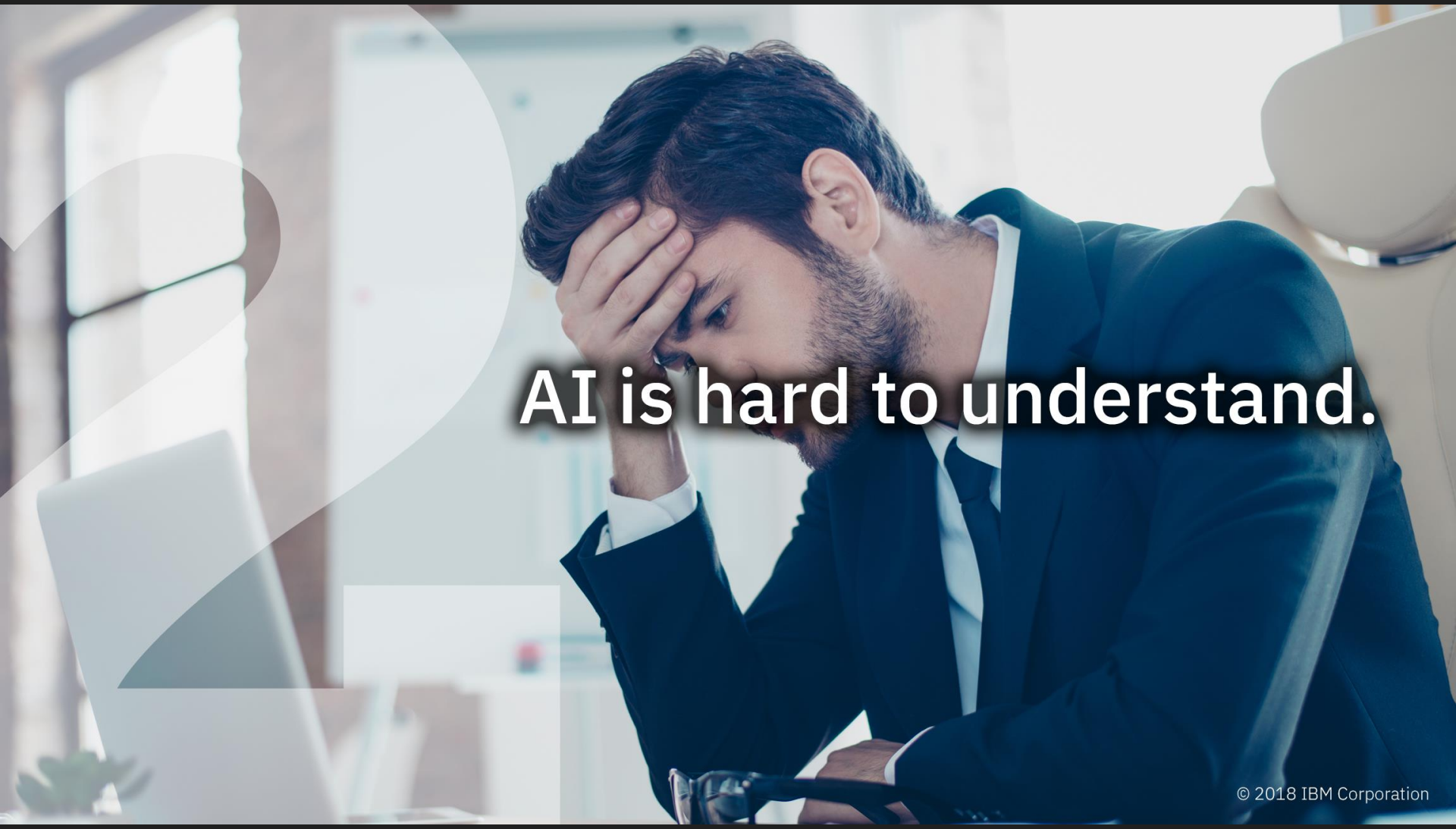
AI is for them...not me.

AI helps free us from the mundane
so we can do the things that matter!



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OBSERVES

INTERPRETS

EVALUATES

DECIDES

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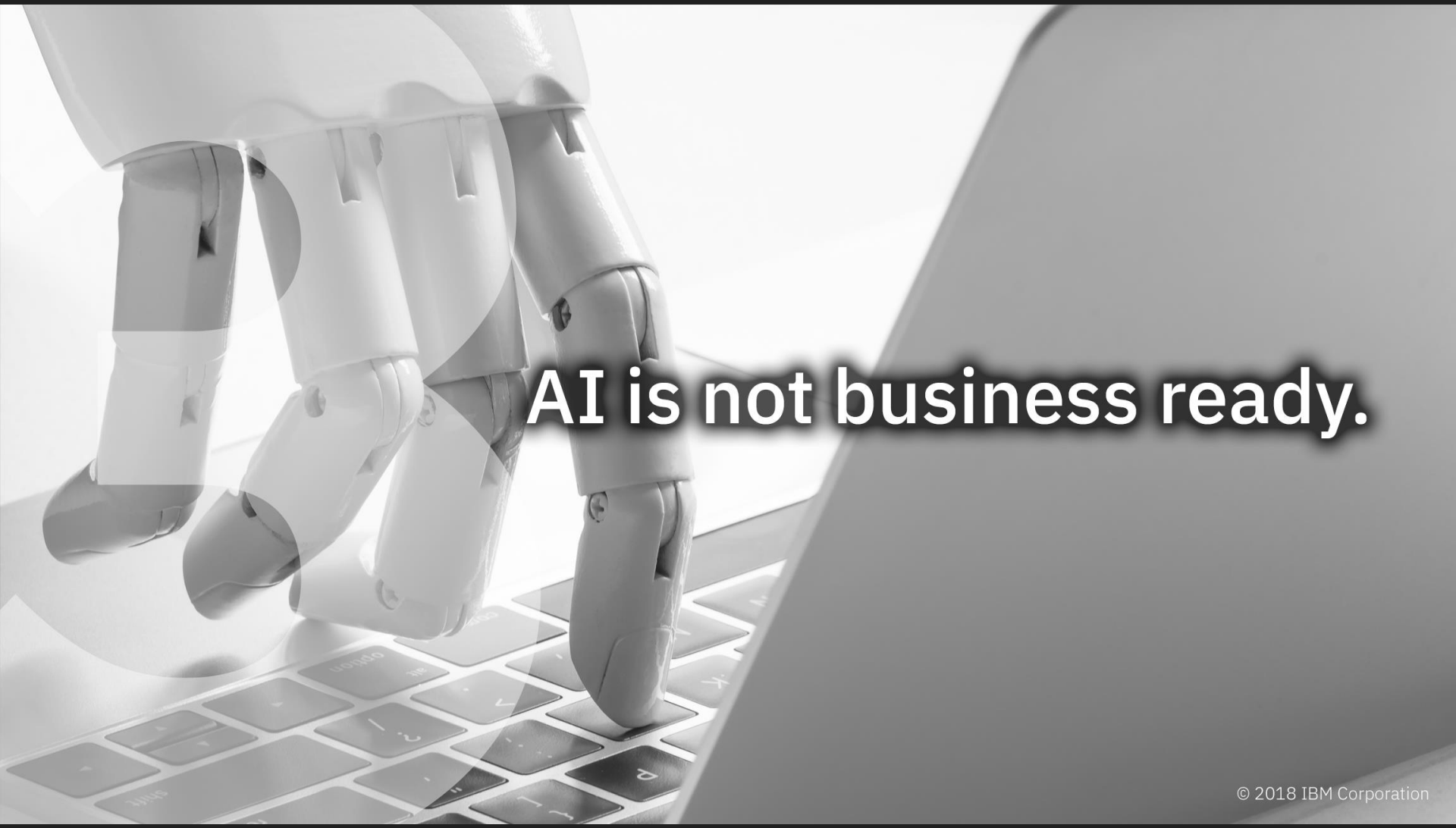
AI is hard to understand.

Effective cognitive systems
think a lot like you do.



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Human and Machine
>
Human or Machine

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AI is not business ready.

AI was made for today's business environments.

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All learners begin at day one.
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With earlier technologies you might have waited to start your journey.
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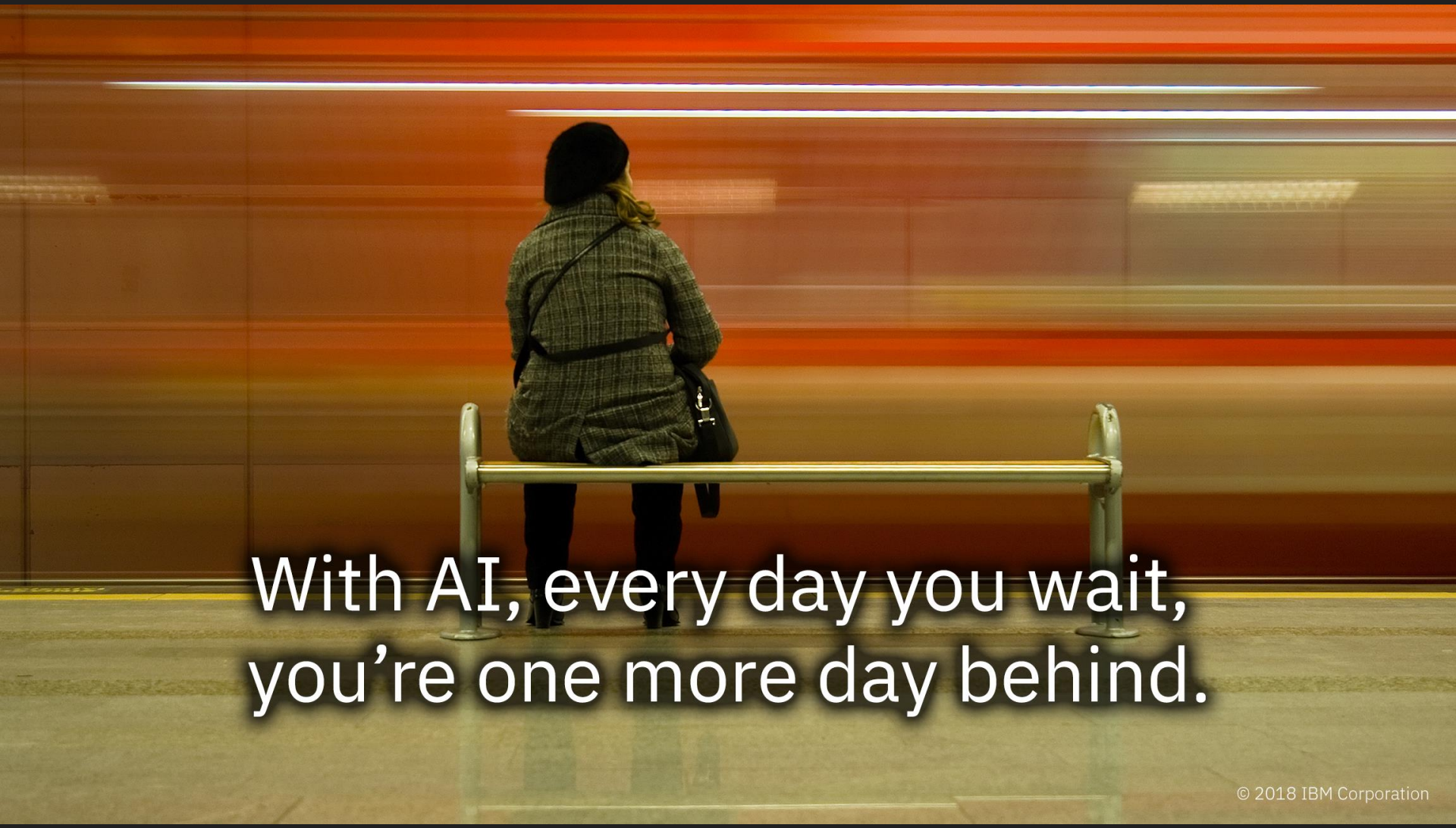

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I should wait to see what happens.

If you’re not moving forward
you’re backing up.

Integrating Business Values with AI/ML

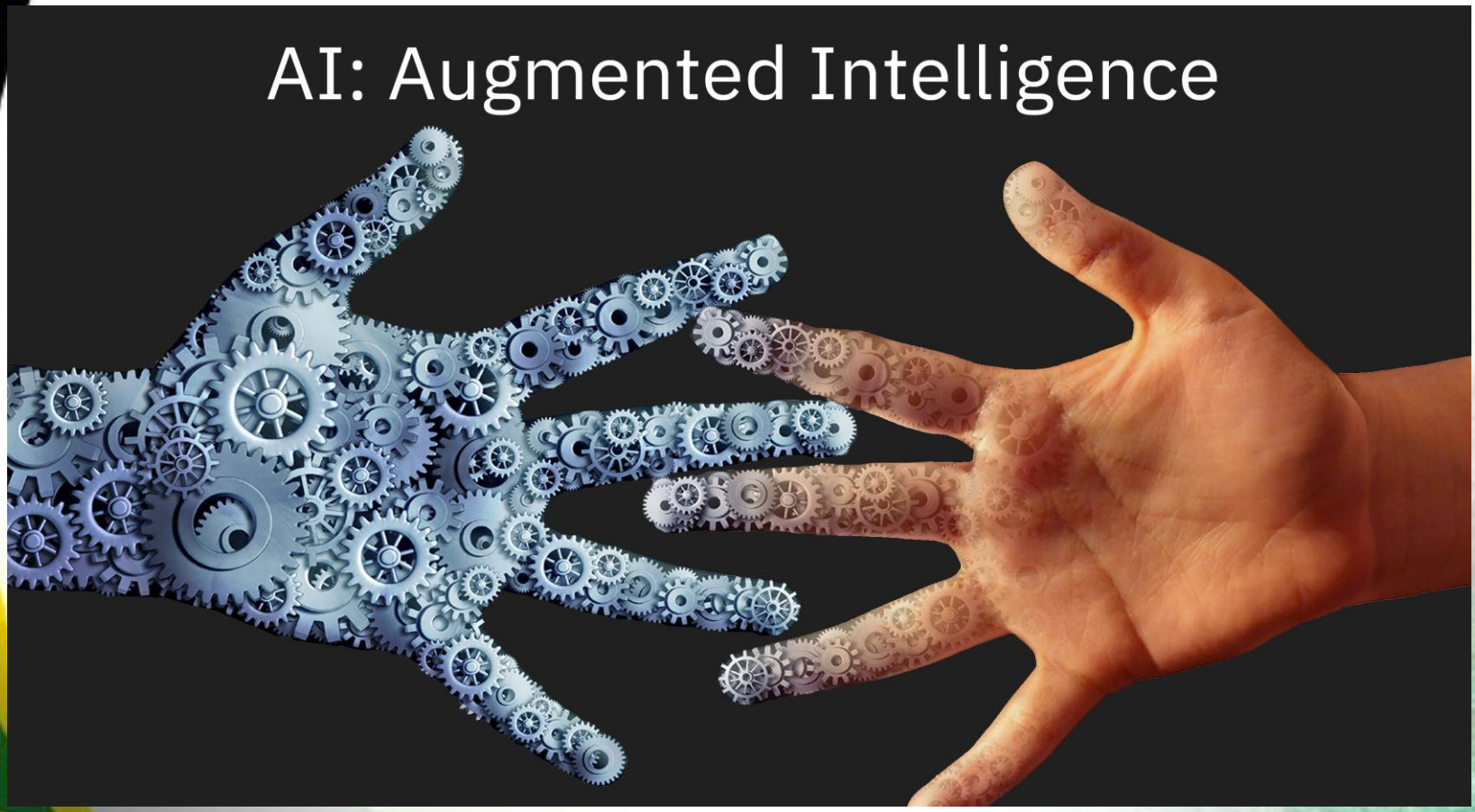
What happens when business goals conflict within decision-making?

How can analytics and optimization deal with conflicting goals?

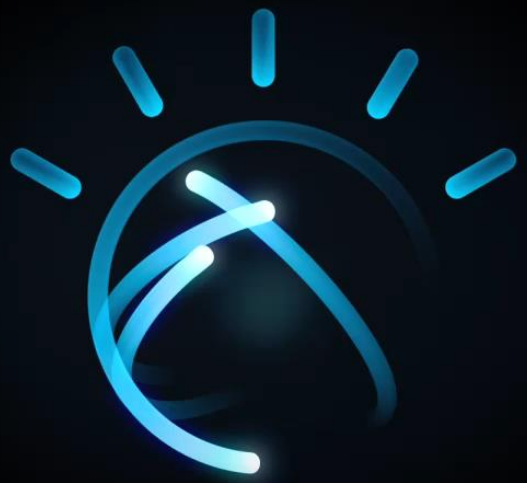
AI/ML/Cognitive allow people to make more informed decisions.

It’s not Man vs. Machine

It’s Man and Machine!!



Thank you!



Jim Collins

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