THE ROLE OF ARTIFICIAL INTELLIGENCE IN CASH FORECASTING.

CRAIG JEFFERY
Managing Partner, Strategic Treasurer

TRACEY FERGUSON KNIGHT
Director – Solution Engineering, HighRadius

WHAT.
How AI is empowering treasury professionals to deliver more value from cash forecasting.

WHEN.
Tuesday, March 17, 2020
2:00 PM – 3:00 PM EST

WHERE.
Live online presentation
Replays at StrategicTreasurer.com

STRATEGIC TREASURER
Consultants in Treasury

highradius
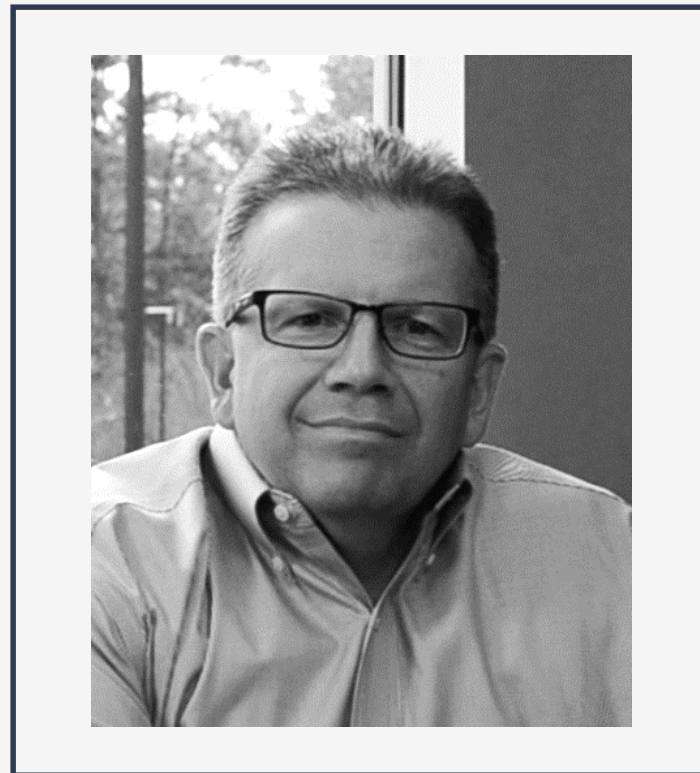
Certified Treasury Professional®

FP&A® Certified Corporate **Financial Planning & Analysis** Professional

This presentation is provided by Strategic Treasurer and HighRadius

SPEAKERS.

GET TO KNOW TODAY'S
SUBJECT MATTER EXPERTS.

CRAIG JEFFERY

Craig Jeffery formed Strategic Treasurer LLC in 2004 to provide corporate, educational, and government entities direct access to comprehensive and current assistance with their treasury and financial process needs. His 30+ years of financial and treasury experience as a practitioner and as a consultant have uniquely qualified him to help organizations craft realistic goals and achieve significant benefits quickly.
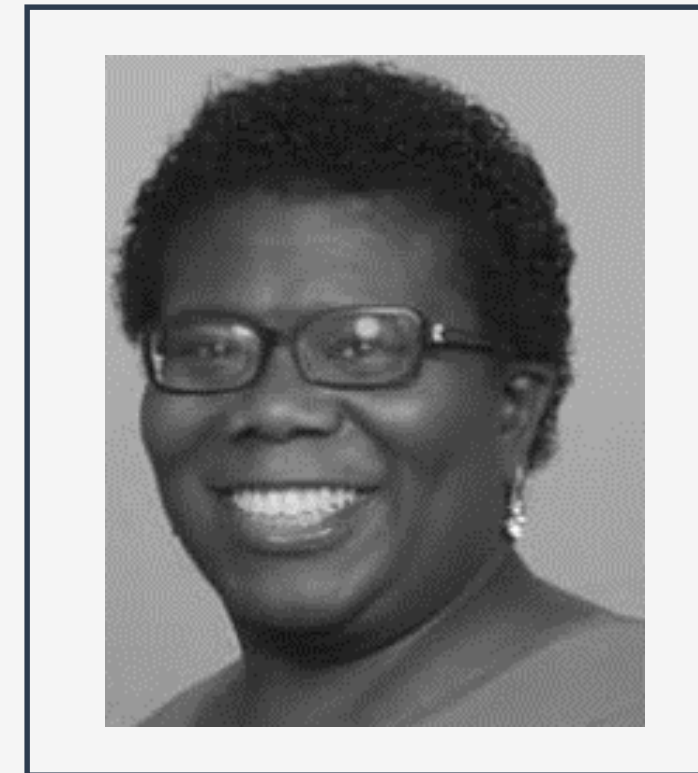
TRACEY FERGUSON KNIGHT

Ms. Knight evangelizes the benefits of treasury departments' effective use of technology to raise treasury's profile and make treasury departments a true strategic partner to the business. Currently at HighRadius, she is excited to be on the cutting edge of treasury technology using artificial intelligence taking cash forecasting to the next level.

With over 25 years of treasury experience, she has helped hundreds of companies select and implement technology to transform their treasury departments. Experienced as both a practitioner and vendor, she brings a unique combination of knowledge and skills to truly understand a company's current state and help them see what their future state can become.

TOPICS OF DISCUSSION.

TODAY'S KEY AREAS OF FOCUS.

Cash forecasting is a process filled with challenges such as lack of accuracy, visibility, and accountability, but artificial intelligence (AI) is empowering treasury professionals to deliver more value.

FORECASTING AND AI
How AI works in the corporate cash forecasting scenario.

AP & AR
Forecasting at the invoice level.

TYPES OF FORECASTING
Understanding some of the methods and their fit.

WHEN TO USE AI
When does it make sense to use AI in forecasting?
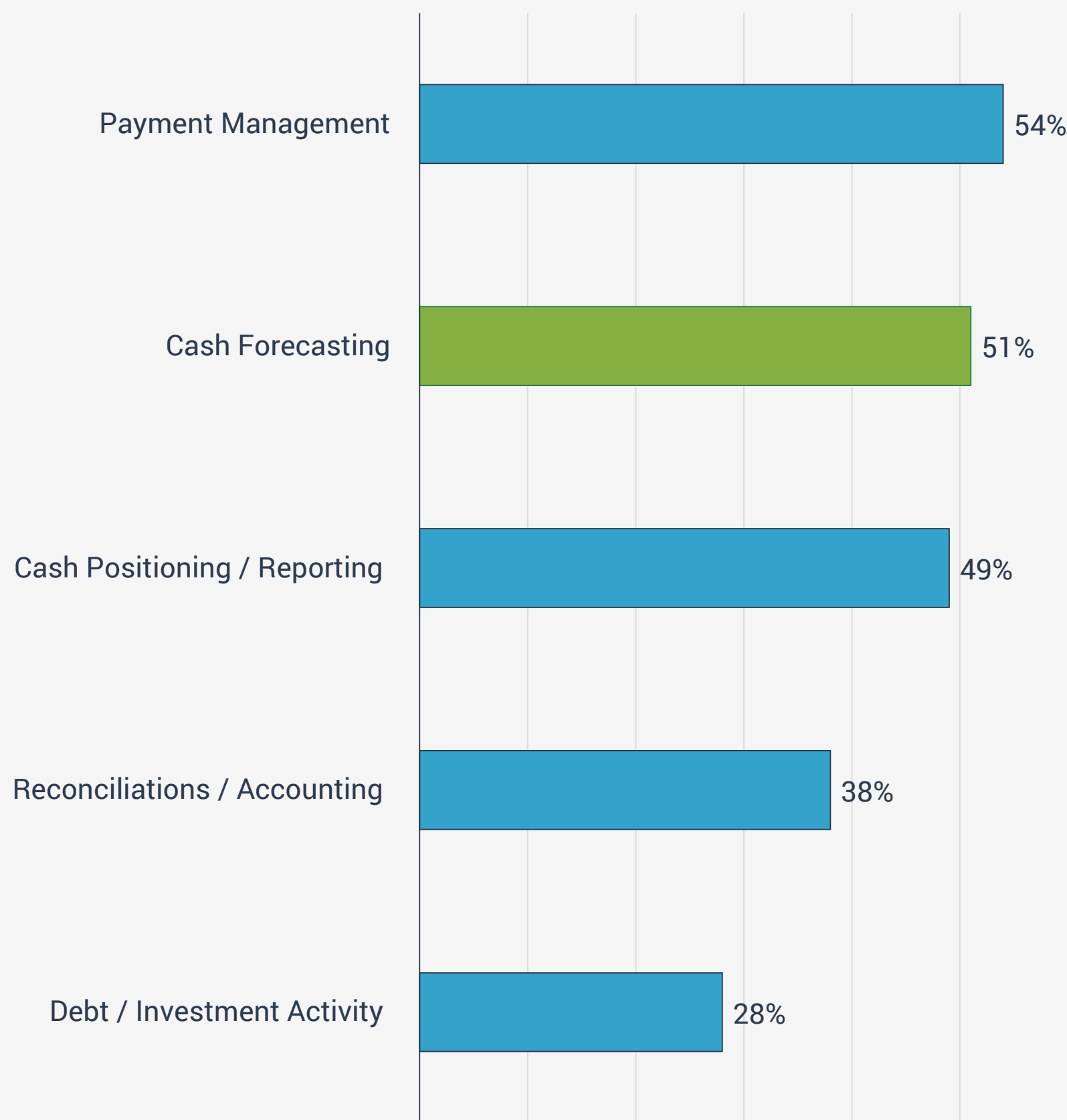
ACCURACY
What level of accuracy is most important?

LOOKING AHEAD
Final thoughts and best practices for AI use in forecasting.

Strategic Treasurer
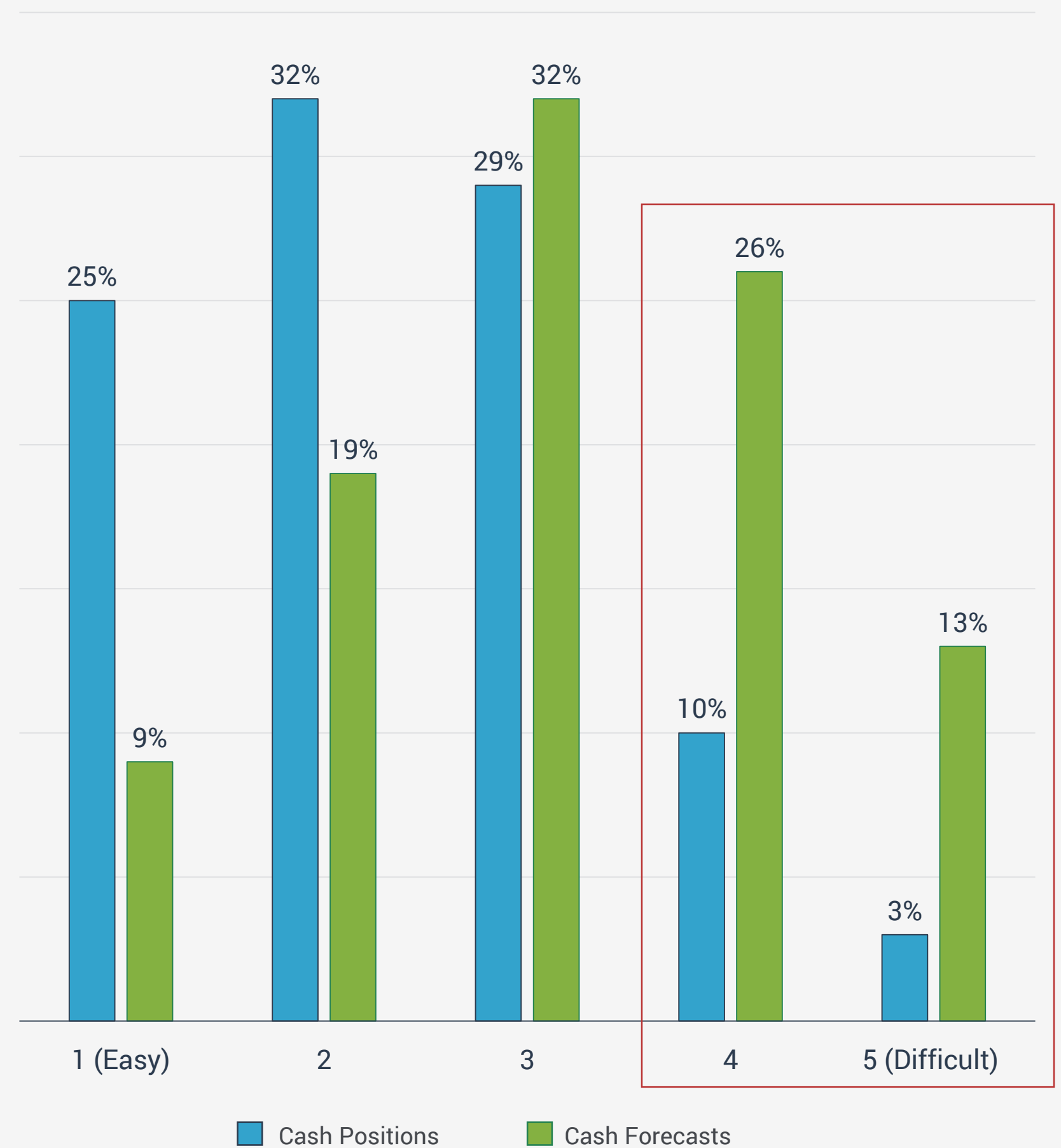*Consultants in Treasury*

highradius

FORECASTING IMPORTANCE.

A SOURCE OF SIGNIFICANT STRAIN

Considering all of your operations, what three (3) areas do you spend the MOST time working on?

Payment Management	54%
Cash Forecasting	51%
Cash Positioning / Reporting	49%
Reconciliations / Accounting	38%
Debt / Investment Activity	28%

(*Only Top 5 Answer Choices Shown)

On a scale of 1-5, please rate how challenging it is for your treasury department to generate:

	1 (Easy)	2	3	4	5 (Difficult)
Cash Positions	25%	32%	29%	10%	3%
Cash Forecasts	9%	19%	32%	26%	13%

■ Cash Positions   ■ Cash Forecasts

#GOSTRATEGIC

4

CASH FORECASTING: HORIZONS.

LIQUIDITY MANAGEMENT PLANNING

SHORT-TERM LIQUIDITY MANAGEMENT

0-30 days	90 days	180 days	270 days	365+ days

- Require more precise measurements

- Used to predict cash receipts, disbursements & cash deficits/surpluses

- Primary responsibility of treasury

MEDIUM-TERM LIQUIDITY MANAGEMENT
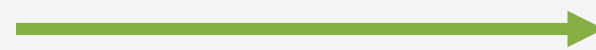
0-30 days	90 days	180 days	270 days	365+ days

- Typically require the development of pro-forma financial statements

- Used for capital budgeting purposes

- Used to determine the need for short-term credit or opportunities for short-term investing

- Check-ups for accuracy of long-term forecasts

LONG-TERM LIQUIDITY MANAGEMENT
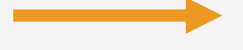
0-30 days	90 days	180 days	270 days	365+ days

- More strategic in nature

- Used to determine sales, expenditures, or market factors of influence

- Accuracy of long-term forecasts have more leeway than short-term

- Guides decision on long-term financing (FP&A functions)

VARIANCE ANALYSIS.

IDENTIFY DISCREPANCIES & EVALUATE THE ACCURACY.

- Helps identify shortcomings within the forecast and aid in improving the accuracy of forecasts moving forward.

- Faster variance analysis = quicker corrections to misestimations and improvements to future forecasts.

- Variance analysis is only helpful if the *specific* reasons behind variances can be identified. It is not good enough to simply identify what the difference was.

Variance Analysis: Forecast to Actual Cash Outflows

	Week 1	Week 2	Week 3	Week 4	Week 5
Forecast	$1,000	$1,100	$755	$1,250	$600
Actual	$900	$1,150	$900	$1,100	$800
Variance	$100	$50	$145	$150	$200

Legend: ■ Forecast ■ Actual

IMPROVING CASH FORECAST.

TECHNOLOGY AS AN ENABLER.

ROBOTIC PROCESS AUTOMATION (RPA)

Office Automation.

- Explicitly programmed by humans

- May contain specific work-flows, decision trees and tolerance checking

- Unable to "think for themselves" or adapt without human intervention to manage exceptions

- Performs repetitive tasks quickly and accurately

MACHINE LEARNING (ML)

Broader AI Technologies/Systems.

- Can learn in a "supervised" arena

- Typically consist of data mining software and predictive analytics

- Able to discern and embark on an appropriate course of action

- May require human intervention to "pull the strings" and define the environment

ARTIFICIAL INTELLIGENCE (AI)

***Machines thinking in a human-like manner.***

- Consumes vast amounts of data and applies it to a specific, pre-defined objective

- Identifies correlations or variables that would be extremely difficult for a human to discover

- Can be given "free reins" with regard to a specific function

- Requires guidance to help the AI to select problems and boundaries

TYPES OF FORECASTING.

METHODS AND THEIR FIT – USING THE RIGHT METHOD.

BUDGET DRIVEN
Revenue/margin oriented.
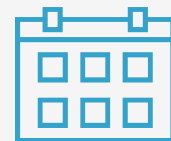
CASH FLOWS
Rolling average, Week-to-date rolling average, historical.

REGRESSION
Finding correlation between specific variables.

AI Relevant | High Accuracy
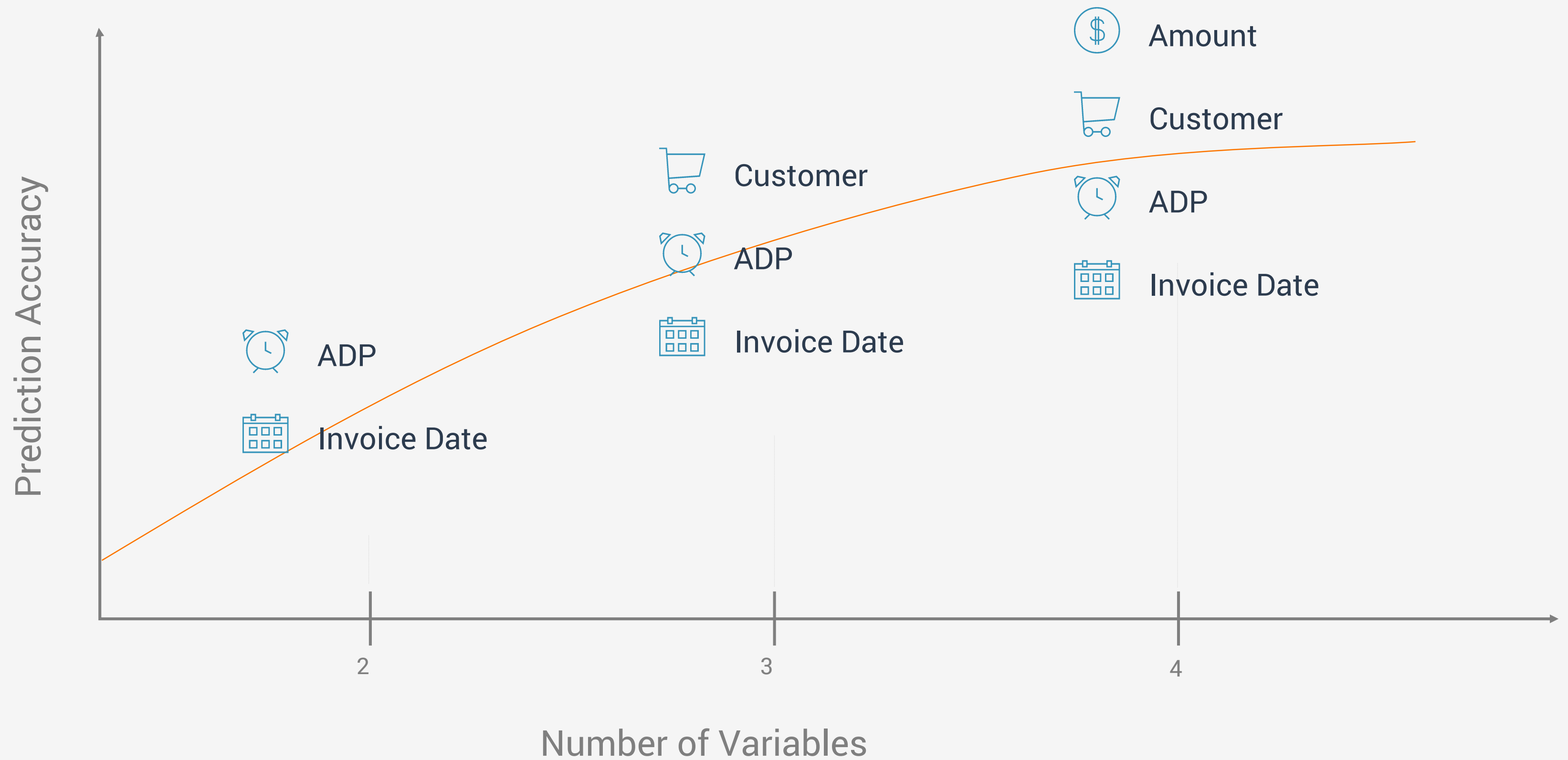
LARGE ITEMS
Tax, acquisitions, settlements.

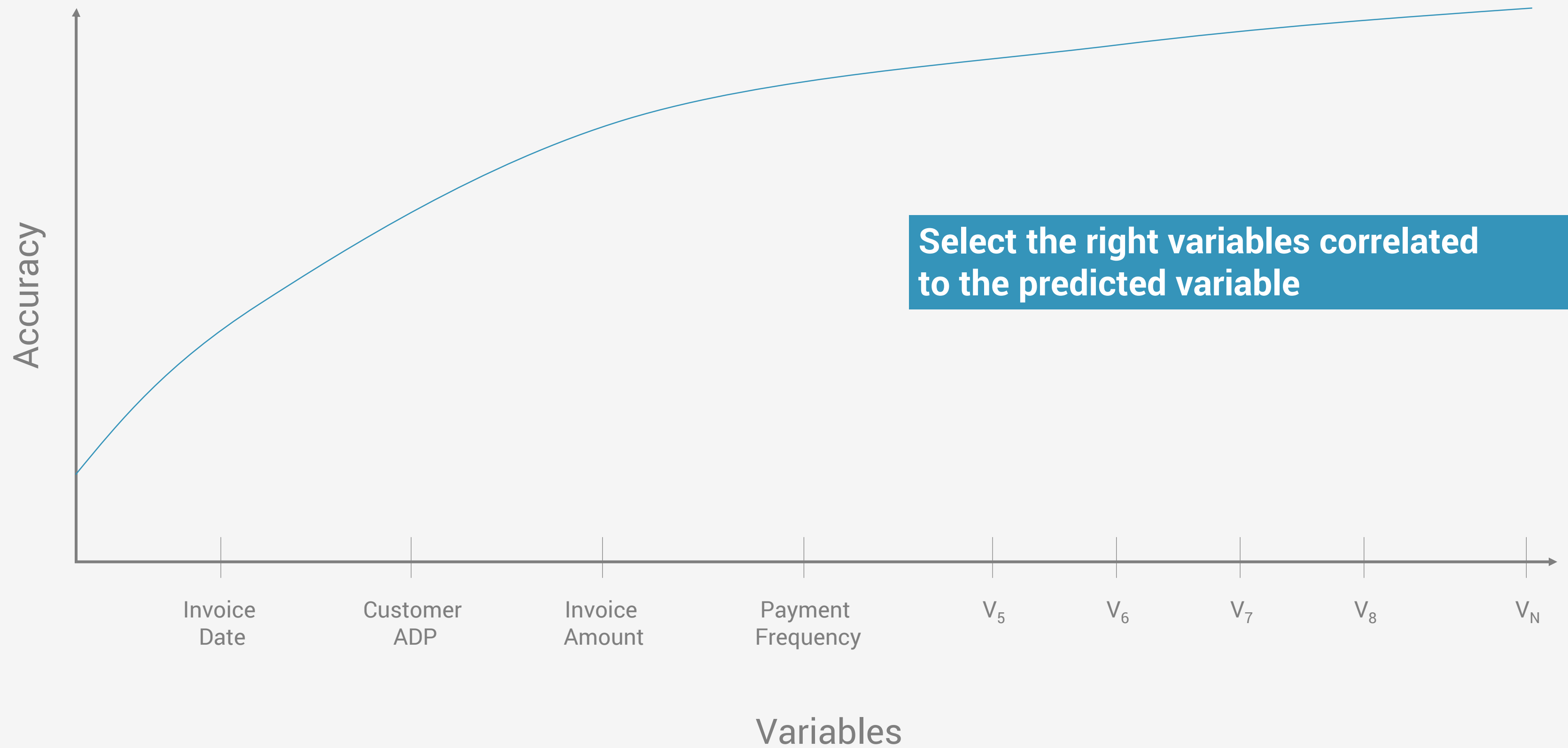### DETAIL TRACKING
Requires data, technology and AI.

AI Relevant | High Accuracy

ARTIFICIAL INTELLIGENCE 101.

IMPACT ON ACCURACY LEVELS.

Prediction Accuracy (y-axis)

Number of Variables (x-axis): 2, 3, 4

- $ Amount
- 🛒 Customer
- ⏰ ADP
- 📅 Invoice Date

- 🛒 Customer
- ⏰ ADP
- 📅 Invoice Date

- ⏰ ADP
- 📅 Invoice Date

#GOSTRATEGIC

ARTIFICIAL INTELLIGENCE 101.

Select the right variables correlated to the predicted variable

Accuracy (y-axis)

Variables (x-axis)

Invoice Date · Customer ADP · Invoice Amount · Payment Frequency · V_5 · V_6 · V_7 · V_8 · V_N

#GOSTRATEGIC

THE BEST FIT CURVE.

FINDING CORRELATION BETWEEN SPECIFIC VARIABLES.

60+
Invoice & Customer
Level Variables

30+
Correlated Variables

25+
AI Algorithms

MASTER LIST

Invoice Date

Customer Specific ADP

Past Invoice Count

Total Open Amount

Gap Between Payments

Delayed Payments Percentage

Branch Level Delays

Closed Invoice Sum

Delayed Invoice Sum

Due Payment Day of the Week

Past Total Delay Count

Customer Average Open Amount

Closed Invoice Count

Past All Invoice Count

Due Gap for Customers

CORRELATED VARIABLES

Invoice Date

Customer Specific ADP

Invoice Amount

Total Open Amount

Gap Between Payments

Delayed Payment Percentage

Branch Level Delays

Closed Invoice Sum

Due Payment Day of the Week

Customer Average Open Amount

Past All Invoice Count

PICK THE ALGORITHM

Linear Regression

Logistical Regression

Random Forest Classifier

Neutral Networks

Decision Trees

Support Vector Machine

Gradient Booster Trees

K-Nearest Neighbor

XG-Boost

Light GBM

Q-Learning

Temporal Difference

CASH FLOW MACRO-CATEGORIES.

Statement of Cash Flow Orientation.

OPERATING

The business flows.

- Accounts Receivable
- Accounts Payable
- Payroll
- Tax
- ERPs, Admin Systems

DEBT & INVESTING

Debt & Investment related.

- Debt
- Investment
- Risk Management
- Treasury Systems

CAPITAL

Dividends, Capital Contributions, etc.

- Capital planning
- Dividend strategy/schedule
- FP&A, Treasury Systems
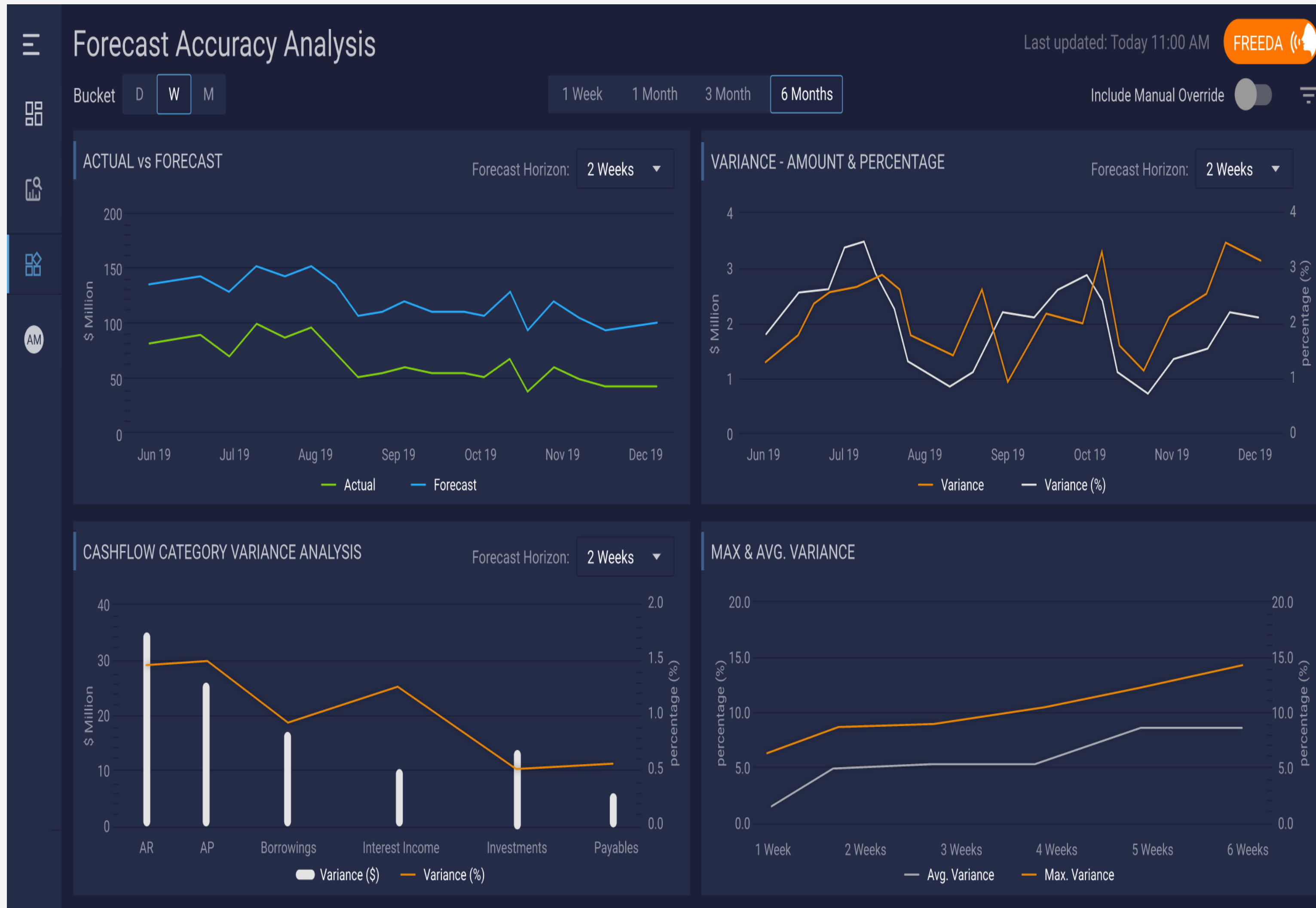
LOOKING FORWARD.

UTILIZING AI.

1. An AI solution is utilized to generate a one month cash forecast.

6. As time goes on, the AI solution would continue to refine its forecast.

2. The AI solution is able to pull sales records, holiday schedules, AP/AR collections & disbursements, interest/loan payments, payroll information, etc. from the company's ERP, TMS, & SCF solutions.

5. During the course of the next month, the AI solution will be performing real-time variance analysis on each cash flow as it occurs to identify discrepancies and make adjustments.

3. An AI solution will be able to go beyond this information, however, to begin performing regression analysis on a never-ending list of data sets.

4. The AI solution performs the one month forecast, using all the data that it has archived. Projected cash inflows and outflows, broken out by the type of transaction and day of execution, are identified.

highradius
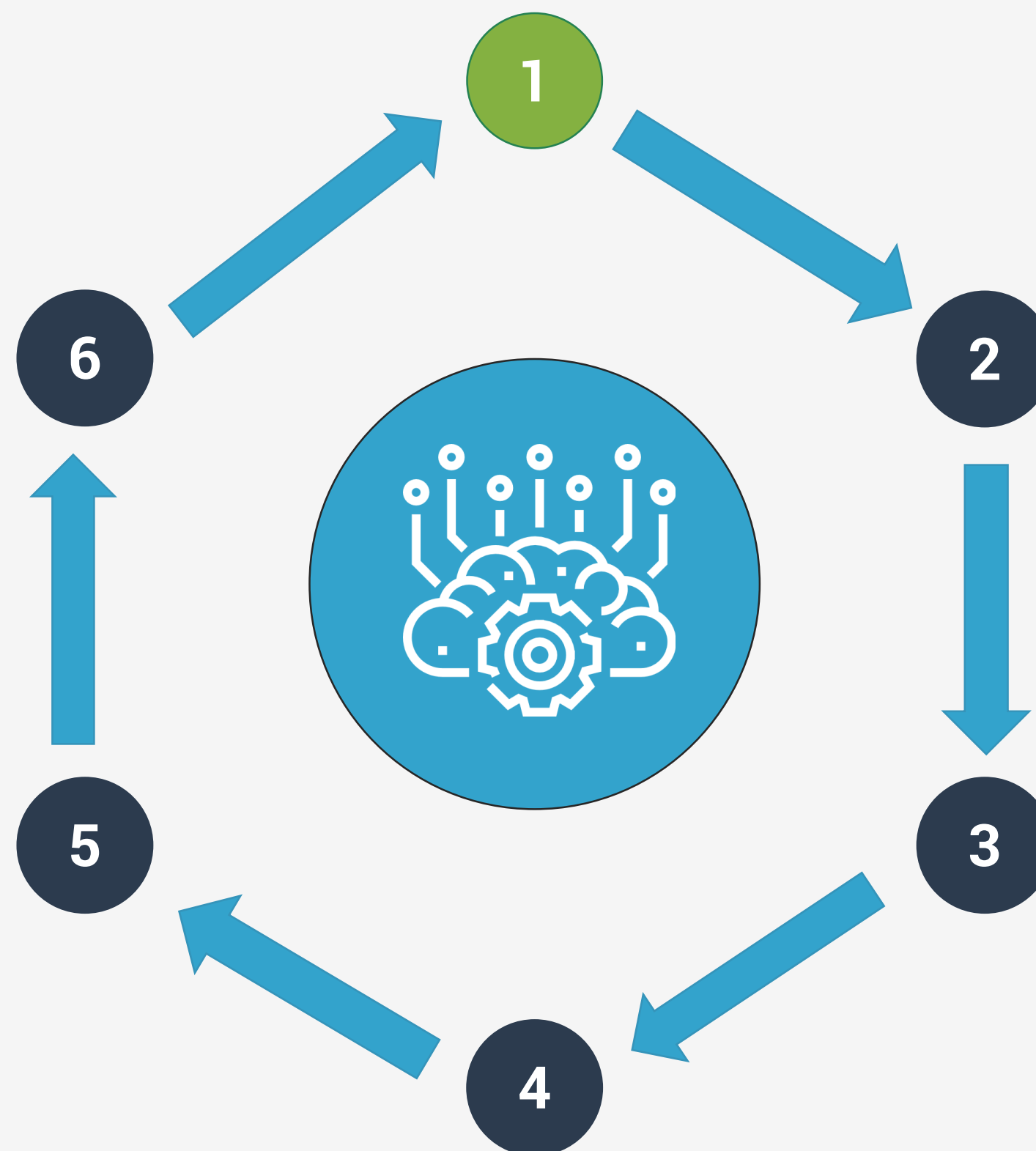
WHEN DOES AI MAKE SENSE.

KNOWING WHEN TO USE FOR FORECASTING.

MODERATE TO SIGNIFICANT CASH FLOWS.

Major items may require separate communication.

MASSIVE AMOUNTS OF DATA AND HISTORY.

Analytically intensive.

ABLE TO LEVERAGE REGRESSION.

Massive volume of smaller transactions where regression is superior.

ACCELERATED LEARNING.

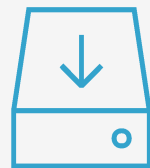Ability to track and adapt (tracking variances).

IMPACT OF ACCURACY.

Value of accuracy and cost of inaccurate forecasts.

FINAL THOUGHTS.

WHAT CAN YOU DO NOW?

CONSIDER AUTOMATION

AI, when combined with TMS systems, Bank Systems, and ERP systems, can substantially improve the quality of the forecasts produced.

SEE THE BIG PICTURE

Observe data from a high level view across different categories and regions.

ANALYZE THE DATA

Automate part or all of the process to reduce the risk of human error, thereby improving confidence in the forecast.

MAKE STRATEGIC DECISIONS

Move from data entry and model creation to being strategic contributors in the CFO's office.

highradius

Integrated Receivables

Credit | EIPP | Cash App | Deductions | Collections

Treasury Management

Cash Forecasting | Cash Management | Bank Reconciliation

Autonomous Systems

Bank of America Merrill Lynch | Citi | PNC | SGE SUSQUEHANNA GROWTH EQUITY, LLC
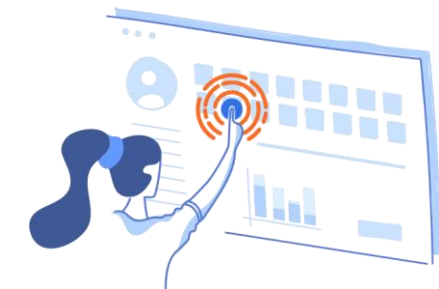
Strategic Investments

2019

Artificial Intelligence

2017

Cloud Solutions

On-Premise Solutions

2014

Trusted by
200+ Fortune 1000
companies

2010

$1 Trillion +
transactions processed annually

2006

LET'S CONNECT.

DON'T LET THE LEARNING END HERE...
CONTACT US WITH ANY FUTURE QUESTIONS.

Thank you for your interest in this presentation and for allowing us to support you in your professional development. Strategic Treasurer and our partners believe in the value of continued education and are committed to providing quality resources that keep you well informed.

STRATEGIC TREASURER

Craig A. Jeffery,
Managing Partner

✉ craig@strategictreasurer.com

💬 +1 678.466.2222

HIGHRADIUS

Tracey Ferguson Knight,
Director – Solutions Engineering (Treasury)

✉ taylor_b@highradius.com

THE TREASURY UPDATE PODCAST

Providing weekly insights and news in your car, at the gym, or wherever you decide to tune in! CTP credits available on select episodes.

🎤 **PODCAST EPISODES**