



Predictive Analytics

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Predictive Analytics – Overview & Roadmap



Agenda

Recognizing and Leveraging Opportunities

- "Nothing is stronger than an idea whose time has come"
- Time for a change in the use of advanced analytics

Predictive Analytics – Demystified and Simplified

- Fundamentals of predictive analytics
- Industrial democratization of advanced analytics

Course Highway

- How to go about Predictive Analytics



Recognizing Opportunities

“Nothing is stronger than an idea whose time has come” – Victor Hugo

Anticipate What Comes Next and Drive Better Decisions... Today!



Structured Data



Automobiles



Click Stream



Social Network



RFID



Smart Meter



Customer Data



Point of Sale

IMHO, it's great!

Text Data



Machine Data



Location-based Data



Mobile

68% of organizations that used predictive analytics realized a competitive advantage

Ventana Research

55% use predictive analytics to create new revenue opportunities

52% use predictive analytics to increase profitability

45% use predictive analytics for customer services

43% use predictive analytics for product recommendations

Predictive Analytics Delivers Value to Business (ROI vs TCO)



Up to 95% increase in forecasts due to inclusion of extra-predictor variables



70% reduction efforts for generating the predictive models



Reduce e-fraud in over 1b annual transactions and save 100m in lost revenue and cut false alerts to improve customer satisfaction



2x higher response rate for cross-sell campaigns which means 100% more sales



56% more likely to predict a customers next (best) purchase



68% more likely to deliver personalized offers to high-value customers through the right channel

Use Case Examples – Potential for Business Optimization



Brand Sentiment / Marketing Mix /
Channel Affinity



Product Recommendation /
Market Basket / Cross- & Up-Sell



Network Optimization



Insider Threats



Optimize the action plans for medical
visitors



Satisfaction Management /
HR Developmet



Predictive Maintenance / Quality
Control / Manufacturing Process
Optimization



Risk Mitigation / Compliance Mgt



Customer Attrition Mgt / Win
Back Strategy / Churn



Real-time Demand/
Supply / Sales Forecast



Predictive Asset Management /
Supply Chain Optimization

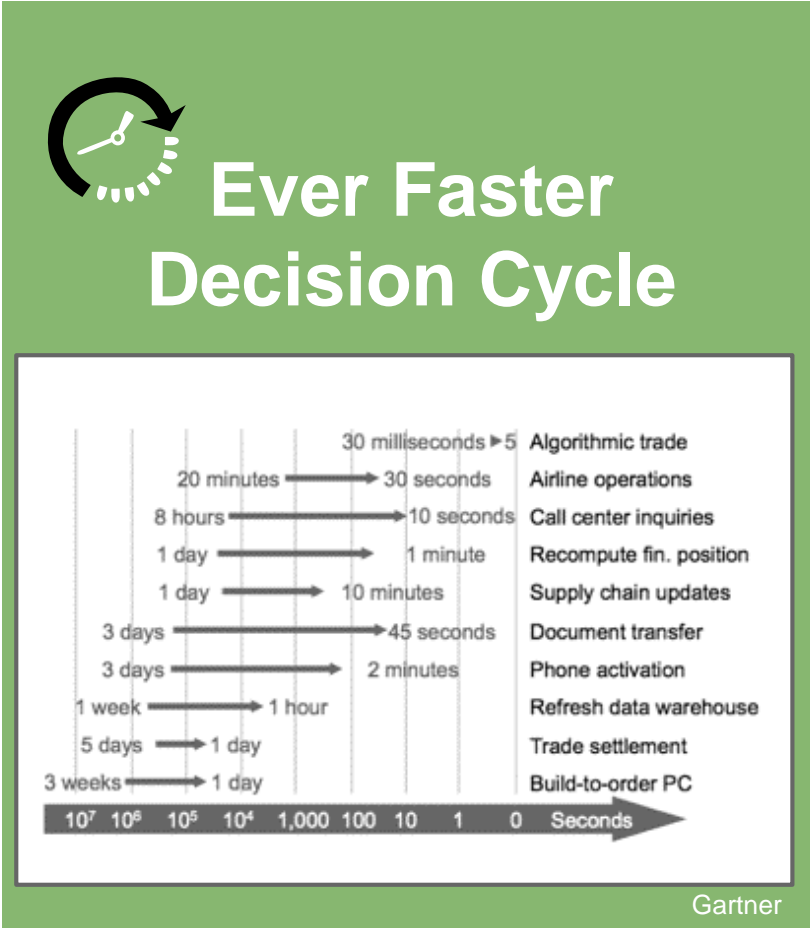
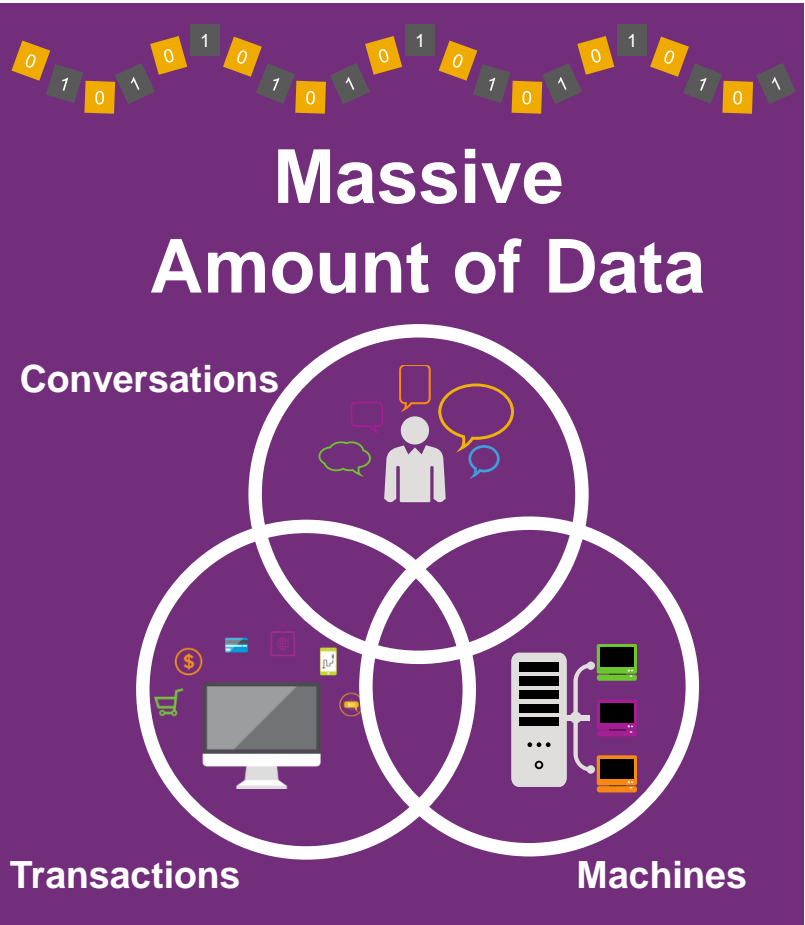


Fraud Prevention & Detection /
Collection Mgt

The Cost of Neglecting Predictive Analytics



It's No Longer Sense and Respond ...



Democratization and Proliferation of Predictive Intelligence

Access and operational integration anywhere, anytime



Data Scientist

“I’m building churn models for every region”

MS Statistics, Berkeley

.01%



Data Analyst

“I need explain to the CEO why sales are down in EMEA”

MBA, U of Pennsylvania

~3%



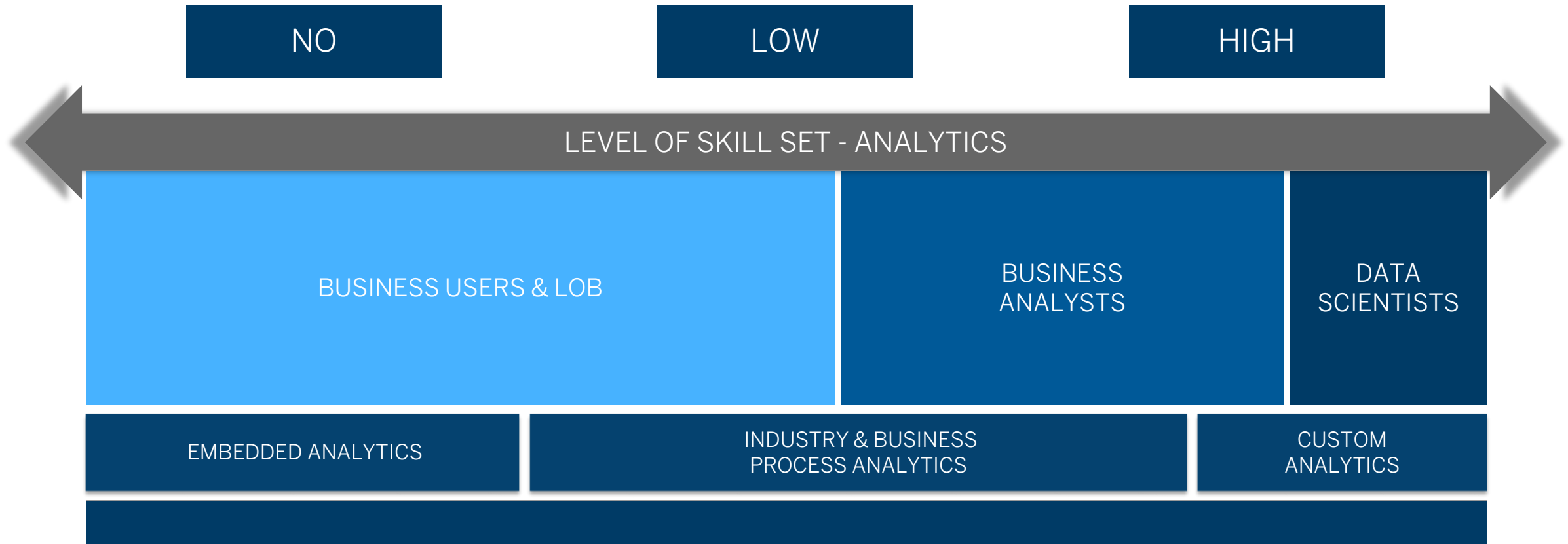
Business User

“The app needs to tell me what offer to make in real time”

BS French Literature, UC Davis

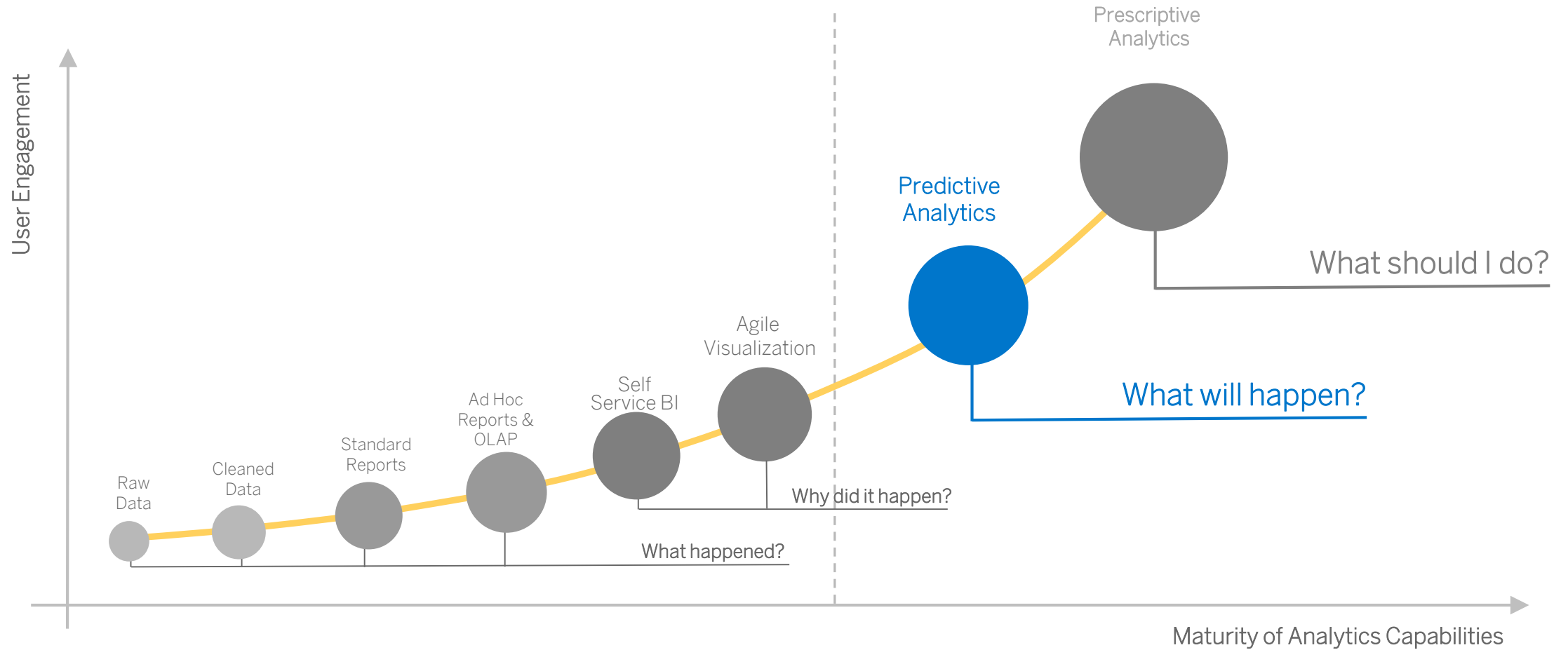
97%

Predictive Analytics: Not Really One Size Fits All



Predictive is Part of the Business Analytics Continuum

From Sense & Respond to Predict & Act

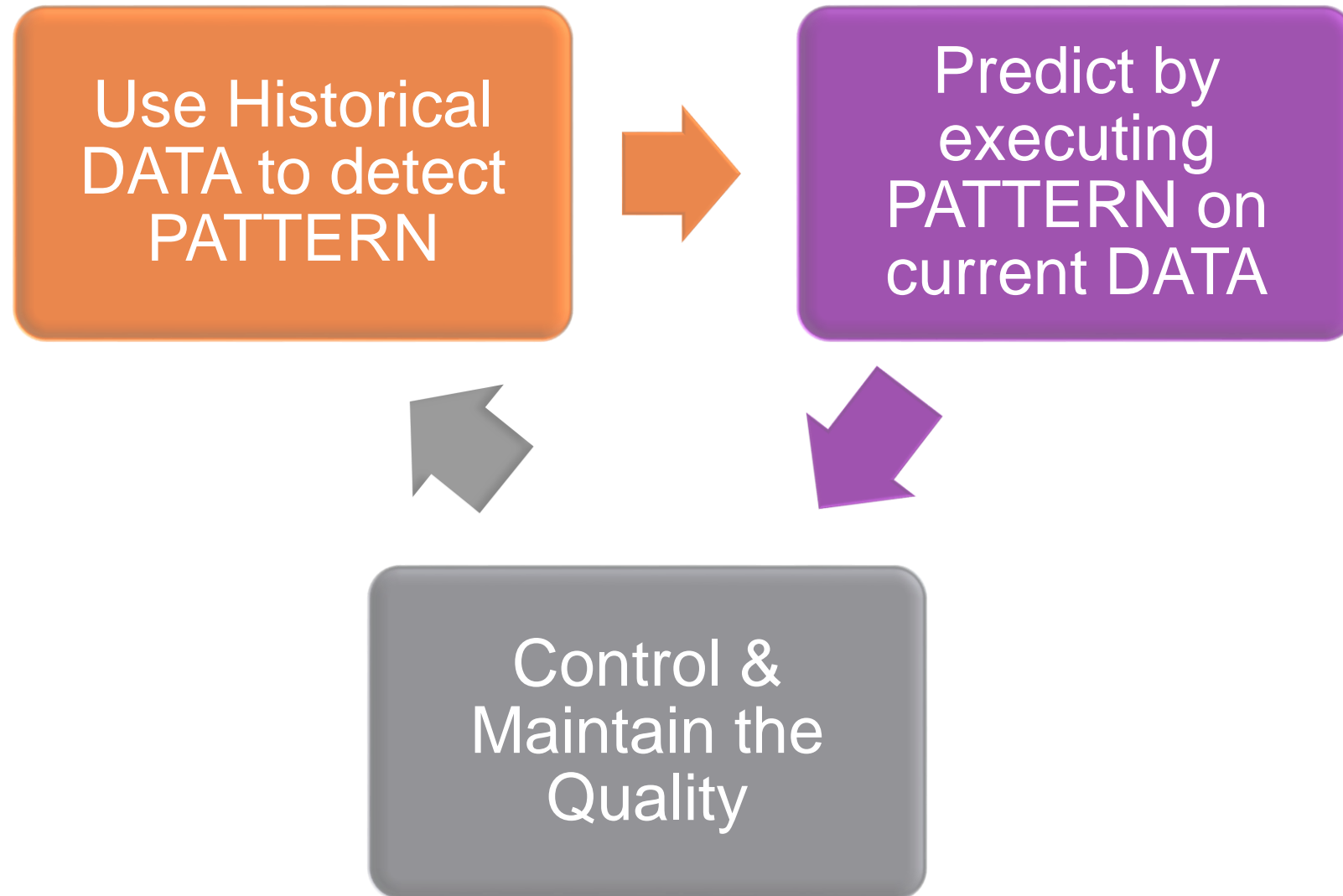




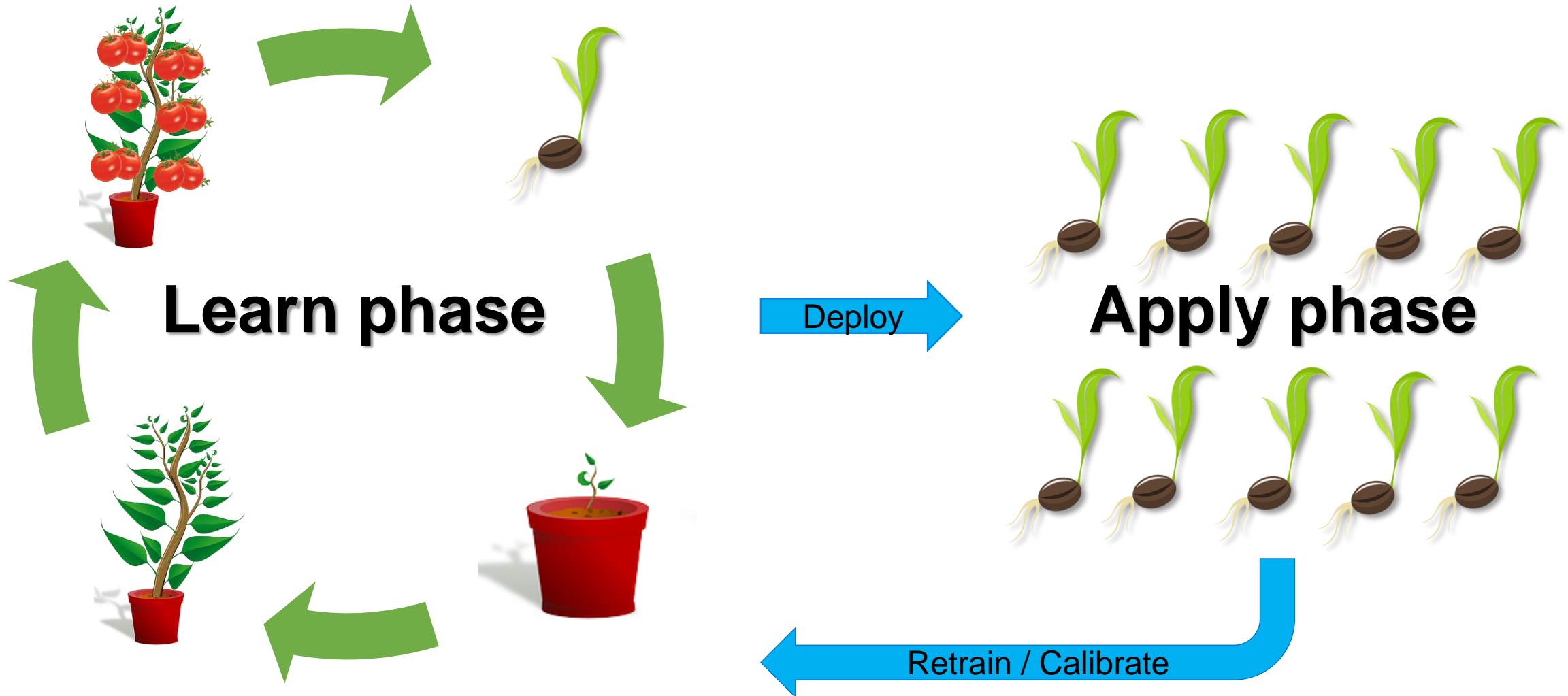
Predictive Analytics

Demystified and Simplified

What is Predictive Analytics?



Simplified Predictive Modeling Lifecycle – Accurate & Robust



A few data mining functions for answering various business questions – non-parametric, non-intrusive

Classification / Scoring

Who will churn, fraud or buy next week, next month ?



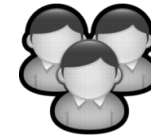
Regression

How many products will a customer buy next month, next quarter ?



Segmentation / Clustering

What are the groups of customers with similar behavior or profile ?



Forecasting

How much will be the monthly revenue or number of churners next year ?



Recommendations

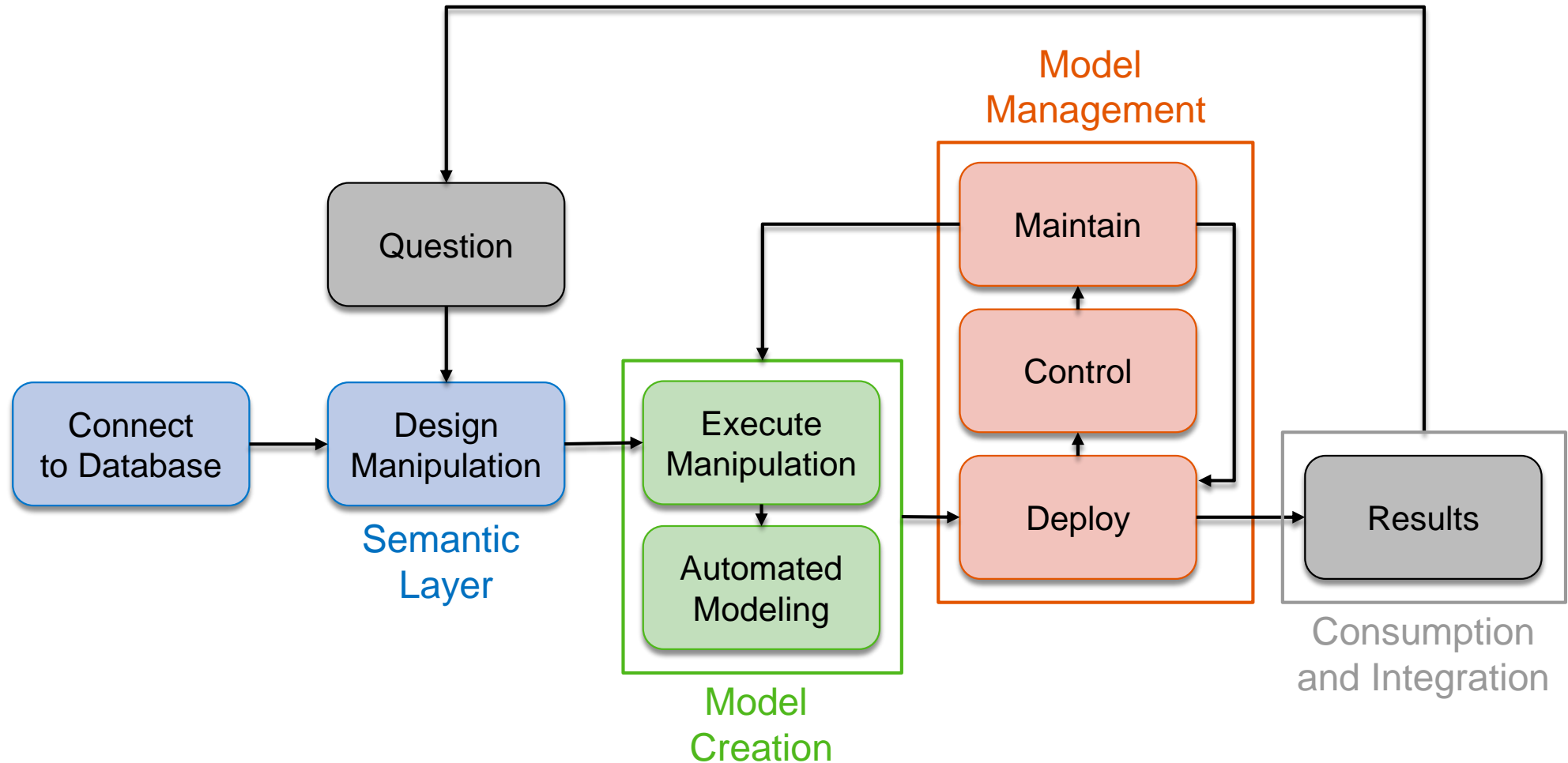
What is the best offer or action for a customer or internet user ?



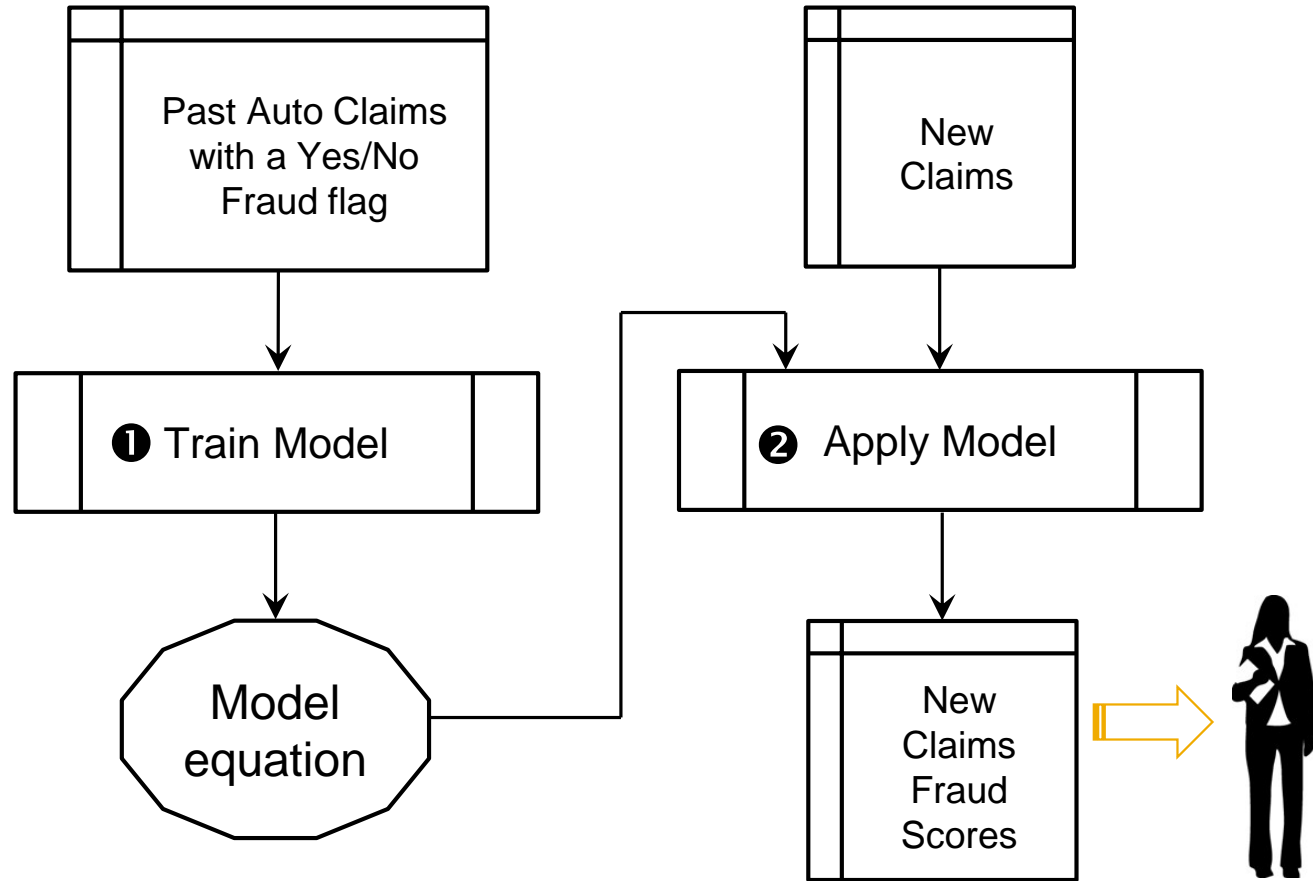
Application Example

Detecting Fraud from Auto Insurance Data

The Predictive Process with Predictive Analytics



Example Process – Fraudulent Claims Detection



Massive Predictive Analytics Embedded in the Digital Enterprise for the Masses

Massive Predictive Factory

Manage massive number of predictive models to improve margins
Automated mining of massive datasets and E2E lifecycle model management



Predictive for the Masses

Democratize predictive through integration in business applications
Operationalized proliferation of Predictive Insights where people interact



Predictive Analytics (PA)

Coming Lectures...

Module 1 – Statistics and Probability

- **Descriptive Statistics:** Data Story
- **Probability:** Prediction
- **Statistical Inference:** Being judgmental!
- **Correlation and Causation:** The organized charity, scrimped and iced, In the name of a cautious, statistical Christ

Module 2- Regressions with ML twist

- "If she loves you more each and every day, by linear regression she hated you before you met"

Module 3- Time Series Analysis

- A 'Thrilling' Style of Overfitting



Cloud for Analytics for
predictive analytics
(1st wave)

Launching

