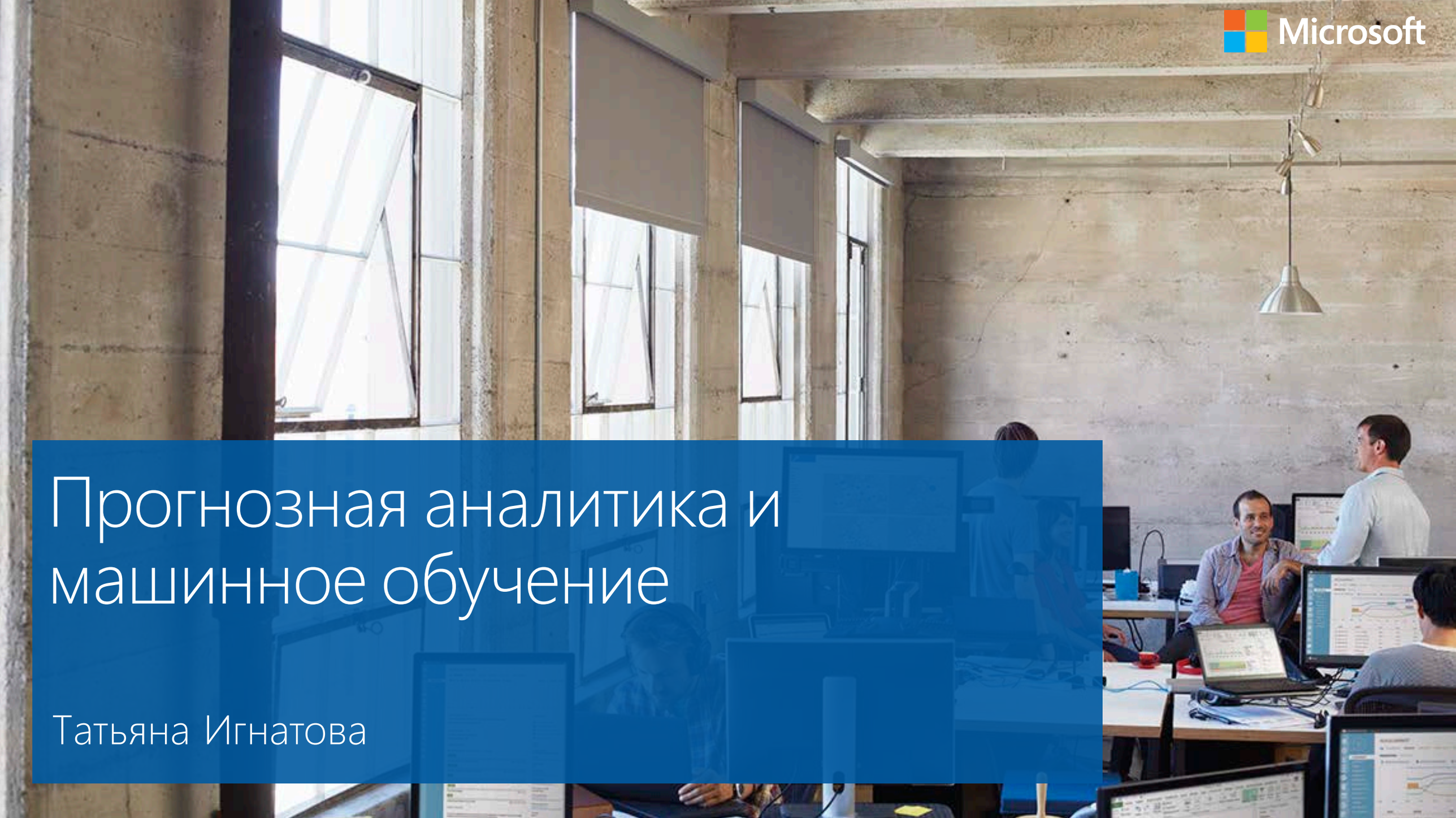


Microsoft

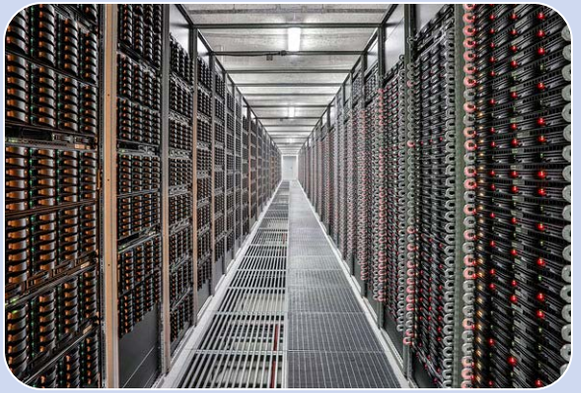
Прогнозная аналитика и машинное обучение

Татьяна Игнатова

Количество цифровых данных удваивается каждые 2 года

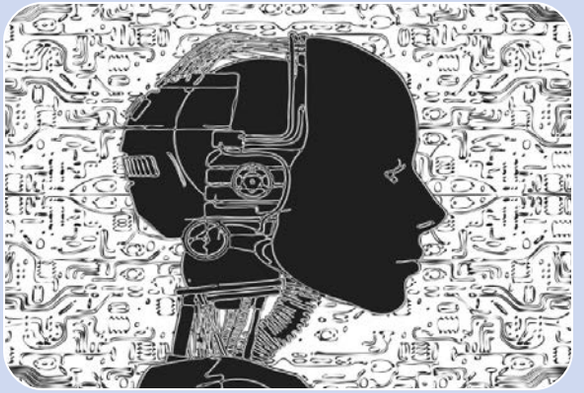
– Международная консалтинговая компания IDC, 2013

От данных к проактивным действиям



«BIG DATA”

сбор статистических данных для модели



МАШИННОЕ ОБУЧЕНИЕ

настраивание алгоритма анализа, извлекающего знания из данных



ПРОГНОЗНАЯ АНАЛИТИКА

прогнозирование будущего с целью принятия оптимальных решений

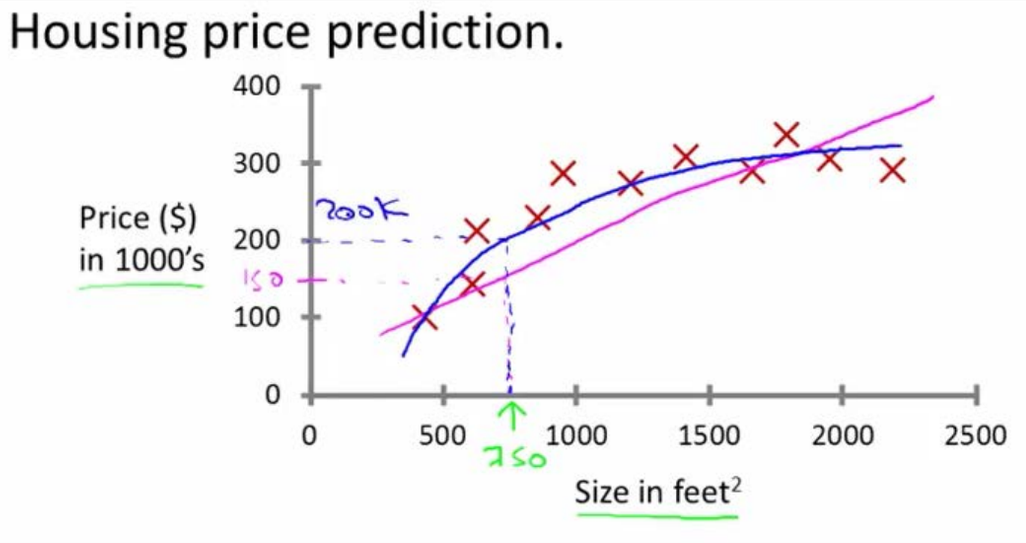
Сферы применения

РЕШЕНИЯ

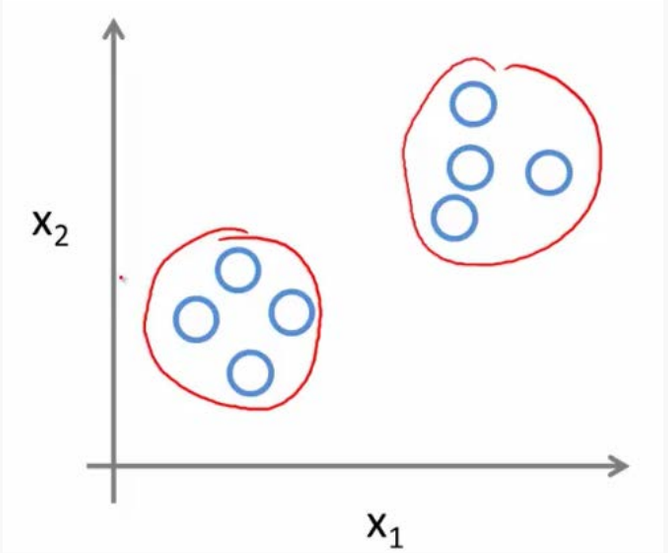
Продажи	Финансы и риск менеджмент	Соц сети, поисковой маркетинг	Оптимизация операционной деятельности
Привлечение нового клиента	Выявление мошенничества	Выявление групп	Операционная эффективность
Дополнительные продажи	Кредитные риски	Персональные предложения	Прогнозная поддержка
Программы лояльности	Прогнозирование	Направленные рекомендации	Логистические решения
Оптимизация маркетингового микса			

Методы прогнозной аналитики

1 Метод регрессии



2 Метод кластеризации



Пример: максимизировать ROI от маркетинговой рассылки

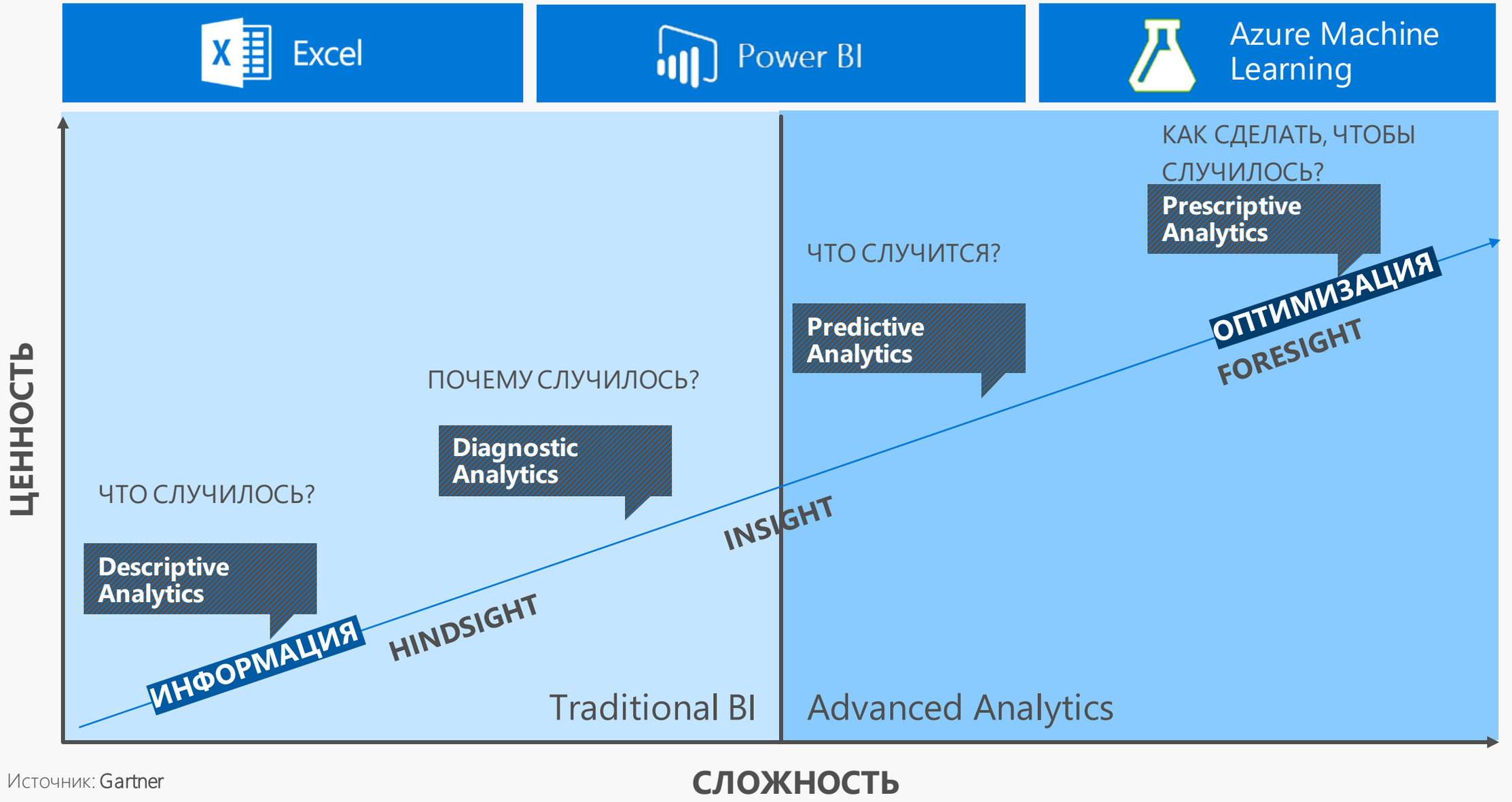
Вводные: 1 милл контактов/$2 стоимость транзакции/ 1% ответа/$220

Доход1 = ($220* 10,000 ответов) – (1милл*$2) =$ 200,000

Если контактировать только 25%, но увеличить ответ до 3%

Доход2 = ($220* 7,500 ответов) – (0,25 милл*$2) =$ 1,150,000 (**X5,75 эффективность)**

Прогнозная аналитика в финансах



Источник: Gartner

Примеры машинного обучения и прогнозирования в MC финансах

Quarterly Revenue for Product Divisions

Central Finance Team

Monthly Accounts Receivables

Treasury

Monthly Headcount

Sales Finance

Geo Level Forecasts for Commercial biz

Segment Finance

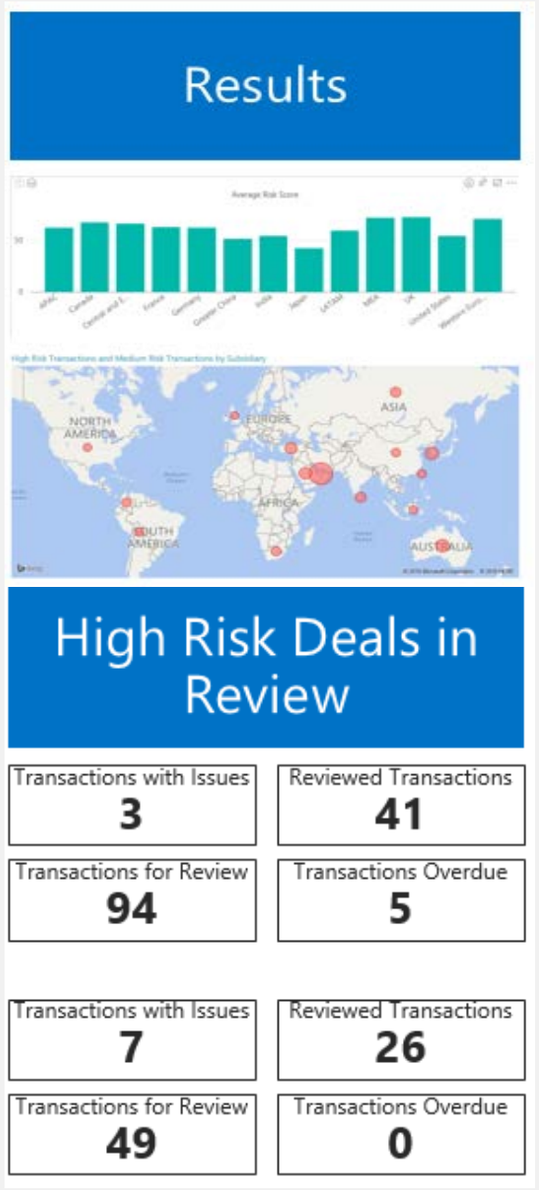
Consumer Device Forecasts Using Search / Social

Consumer Product Group

New Work Sold Revenue

Microsoft Consulting Services

Пример - риск менеджмент





Кредитная история

Партнер

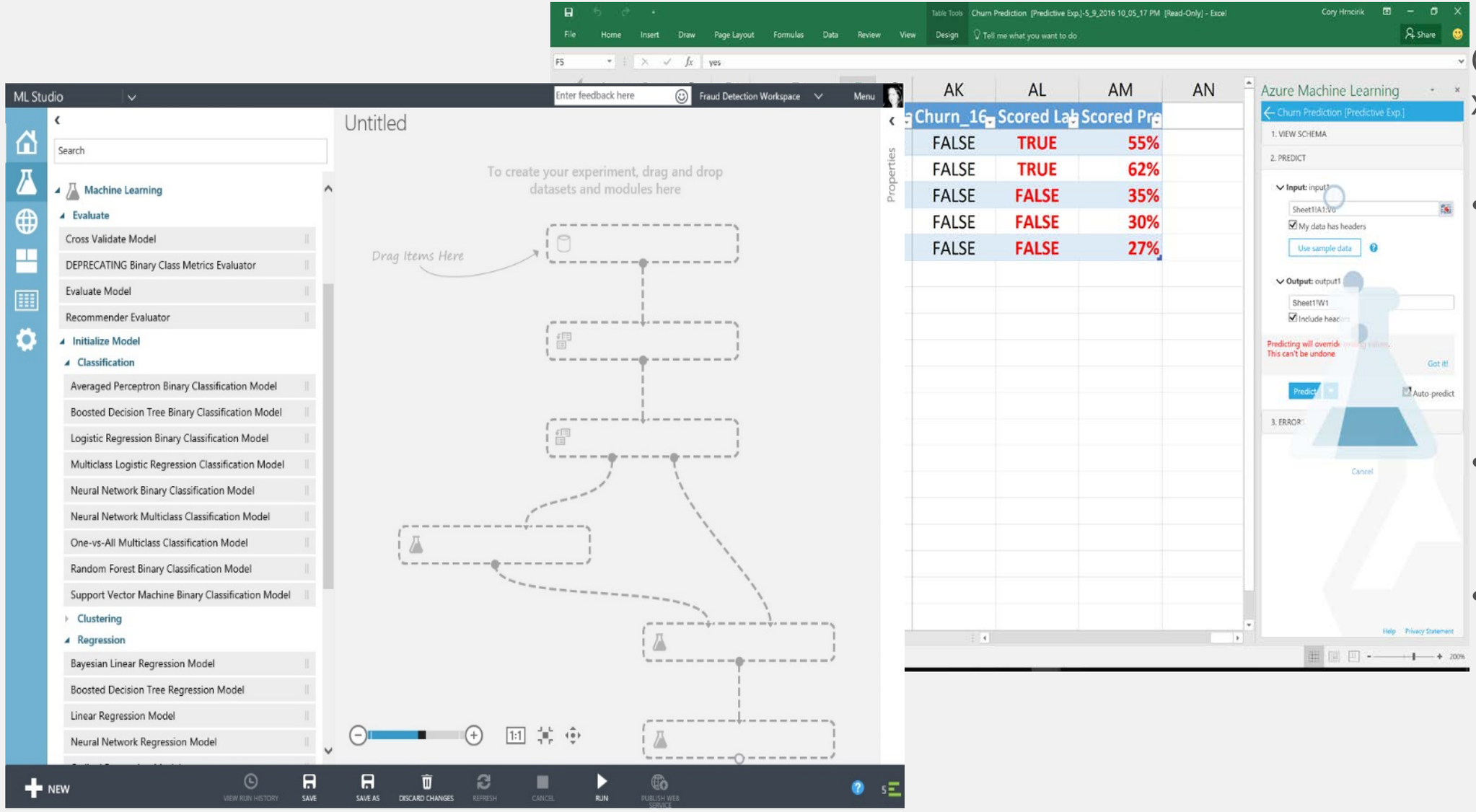
Регион продаж

% Скидки

Отклонение от тренда

Azure Machine Learning

https://azure.microsoft.com/ru-ru/services/machine-learning/



Основные характеристики:

- Azure ML простые в использовании поля настройки по принципу drag & drop
- Инструменты визуализации Power BI
- Интуитивные поля ввода статистических данных по принципу Excel



Microsoft

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Revenue Forecasting

Microsoft Finance
CFP&A

Central Finance team used ML-based quarterly forecasts for ~50% of publicly reported revenue. Ran forecasts in parallel to internal forecast for 7 quarters.

Key Benefits

- ML-based forecast accuracy comparable to internal forecasts.
- Forecast accuracy as high as 0.01% forecast error
- Provides Microsoft with another forecasting option on which to base final Wall Street guidance.

"This helps us triangulate internal forecasts and gives us more confidence in the forward looking revenue ranges we provide to Wall Street."

Vandana Gangawar
Senior Director,
Central Finance Planning and Operations

Revenue Forecasting

Microsoft Enterprise and Partner Group needed to create more accurate quarterly CFO forecasts to drive ongoing performance and expectation management, process efficiency, and internal/ external reporting.

Key Benefits

- Achieved as low as 0.1% forecast error
- Science-based forecast removes human bias
- Adding additional external data sources to achieve further forecast accuracy

Microsoft Finance

“Advanced Analytics has been a valuable tool in our quarterly forecast process driving increased accuracy, process efficiency, and meaningful insights.”

Natasha Milovic
Microsoft, Enterprise and Partner Group Finance

Revenue Forecasting

Microsoft Finance
Treasury – Capital Markets

Revenue earned in foreign currency is subject to FX revaluations. Microsoft Treasury needed to improve its accounts receivable forecasts in order to optimize monthly FX hedging of accounts receivables.

Key Benefits

- Total forecast accuracy improvement vs. internal manual forecast of $1.7 bil. in 2015.
- Time series models achieved accuracy improvements as high as $450 mil. monthly.
- Automation of forecasting process reduces human involvement and potential for errors.

“Forecasts drive our hedging decisions. It does not take a big variance on billions of dollars in exposure to meaningfully impact the business and earnings. Improving our forecasts has an immediate and tangible effect.”

Greg Kaplan
Senior Portfolio Manager, FX, Microsoft Treasury

Revenue Forecasting

Microsoft Services

Professional Services Team uses AzureML to create monthly and quarterly sales forecasts for Sales Management and Reporting.

Key Benefits

- Programmatic data-driven process made significant progress to reach goal of +/- 5% of actuals.
- Monthly ML forecast beat internal forecast 75% of the time.
- Quarterly ML forecast beat internal forecast 83% of the time.
- No incremental cost in software/hardware/people.

“We demonstrated that using standard products and current staff, we can solve complex problems with a high quality, low barrier to entry tool set.”

Ben Boatman
Senior Analyst, Global Services Sales

Revenue Forecasting

Microsoft online store needed to forecast orders of all Microsoft and third-party products sold online. Weekly forecasts are produced by Azure ML and Azure Data Factory, and populate a dashboard with no human involvement.

Key Benefits

- Real-time merchandising decisions can be made to increase sales and demand for certain products.
- Allows for immediate remediation of sales to ensure budget is attained through the use of the forecast.

Microsoft Store

> *"The Azure ML team has allowed the Stores business to grow in ways we didn't think were possible. Processes that were once done manually are now actionable in real time instead of days later."*

Nick Reef
Business Operations Lead,
Microsoft Universal Store

Demand Forecasting

Microsoft Azure

The Cloud Infrastructure and Operations team relies on accurate forecasts to optimize data center hardware purchasing. They used AzureML to forecast demand for Azure compute (cores) and storage (petabytes) on a daily and weekly basis for 19 regions.

Key Benefits

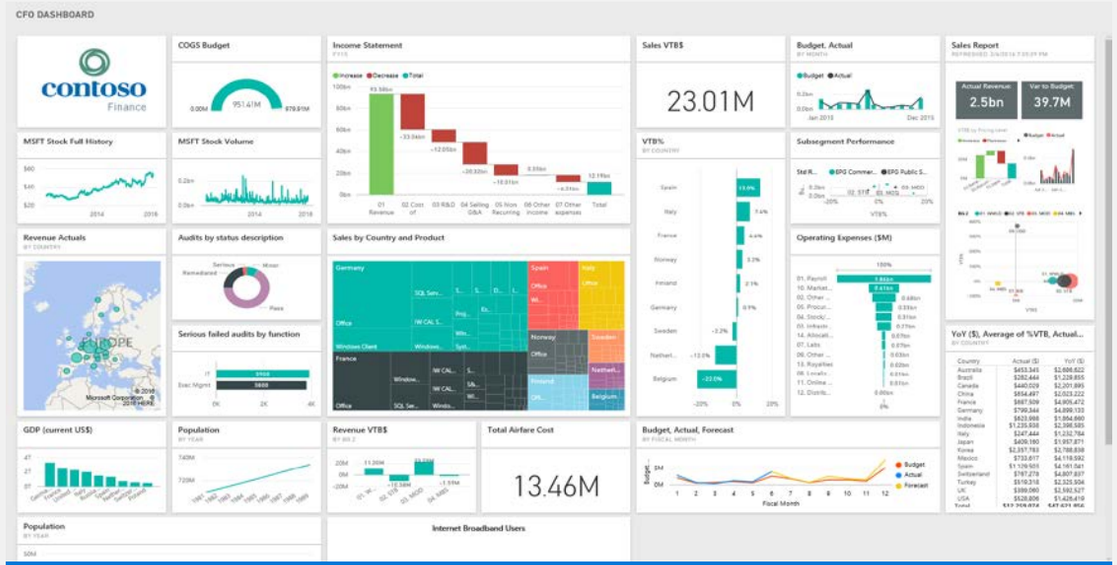
- End-to-end automation with no manual intervention.
- Ability to reuse existing R-forecast models in AzureML.
- Exploring new model improvement techniques including ensembling.

> *"The MCIO team has migrated all Azure forecasting models from local R servers to Azure Machine Learning recently. Performance improvements are significant, with as much as 200 percent improvement in some cases. All Azure demand signals are generated from AML environment today."*

Jay Sreedharan

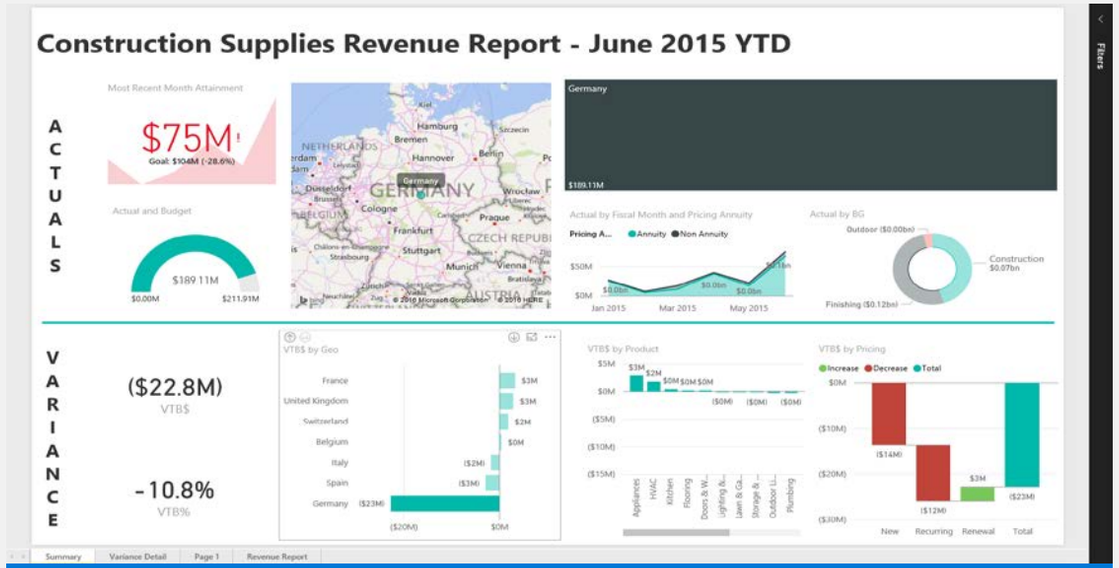
Director of Data Engineering
Cloud and Infrastructure Operations

Power BI in MS Finance



Self-Service Dashboards

- Created throughout the Finance org by to highlight certain KPIs from reports
- Enable great collaboration thanks to connection with O365 – allowing publishing to groups or individuals
- Empower Finance leaders to monitor performance anywhere and on any device



Interactive Reports

- Provide analysts the ability to explore data faster and more efficiently than ever
- Connect to any data – from Excel files to our SQL Data Warehouse or Azure Lake
- Secured with role-level security on any datasets to ensure data remains confidential and safe