



IBM's Analytics Transformation

Value Capture from Big Data, Analytics and Cognitive Technologies

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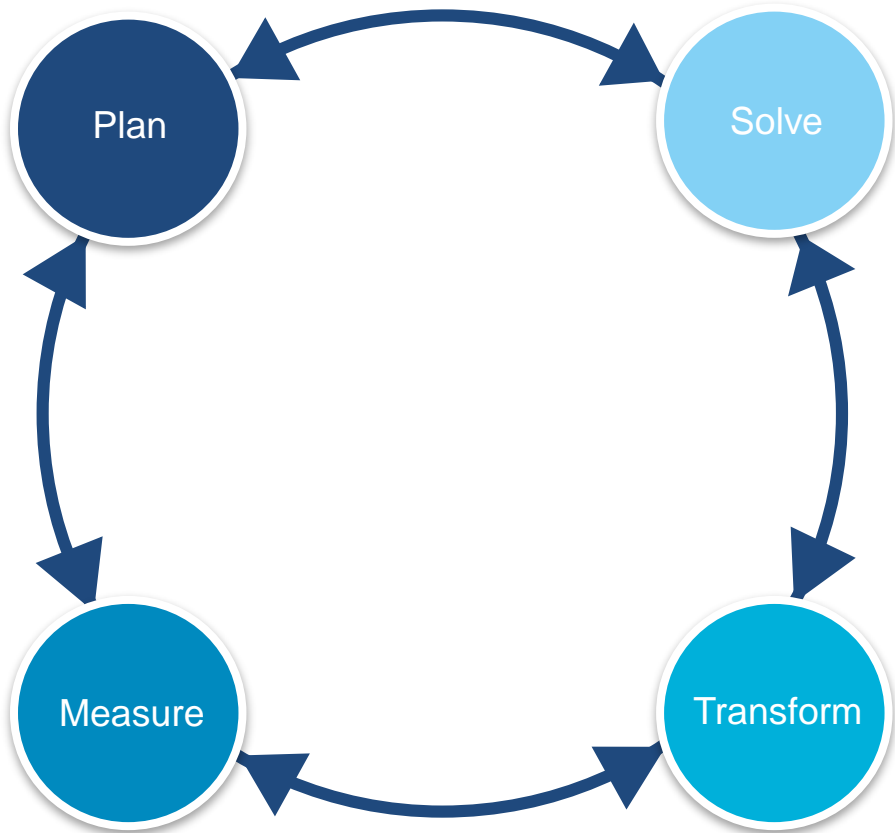
Analytics Aligned to Strategy

Enabling Benefit Realization

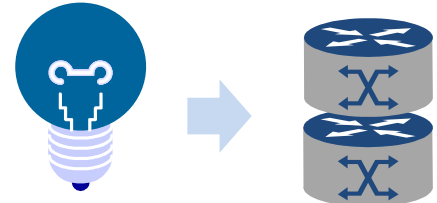
Innovation agenda aligned to strategy



Quantification of business value



Agile Methodologies



Rapid cycle Deployment



Statistical Tracking and Assessment of Revenue (STAR)

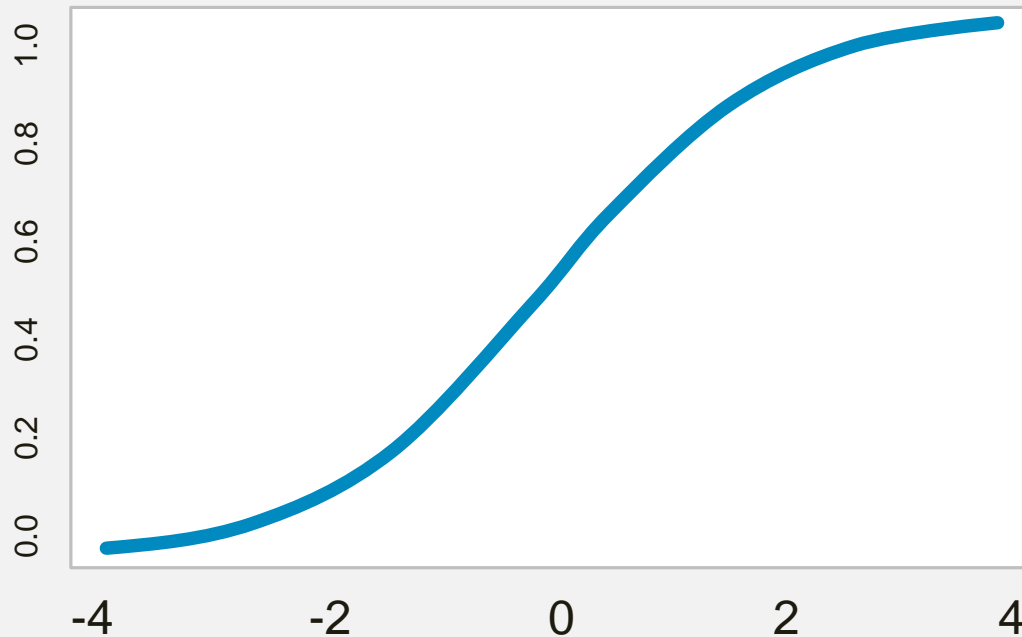


A STAR in the Forecast

- Advanced analytic model
- Revenue projection tool with $\pm 0.5\%$ accuracy
- Transforms revenue assessment process
- Based on patented algorithms
 - IBM Patent Disclosure “Dynamic Ensemble Modeling for Revenue Forecasting”

STAR Forecasts All Revenue Types

- **Transaction Revenue:** Logistic regression with factor engineering



$$Prob = \exp (B_0 + B_i x_i) / (1 + \exp (B_0 + B_i x_i))$$

- **Stream revenue:** Assessed using time series and regression models for seven revenue types

Exponential smoothing has ability to give preference to recent data and quickly adapt to changes in the data:

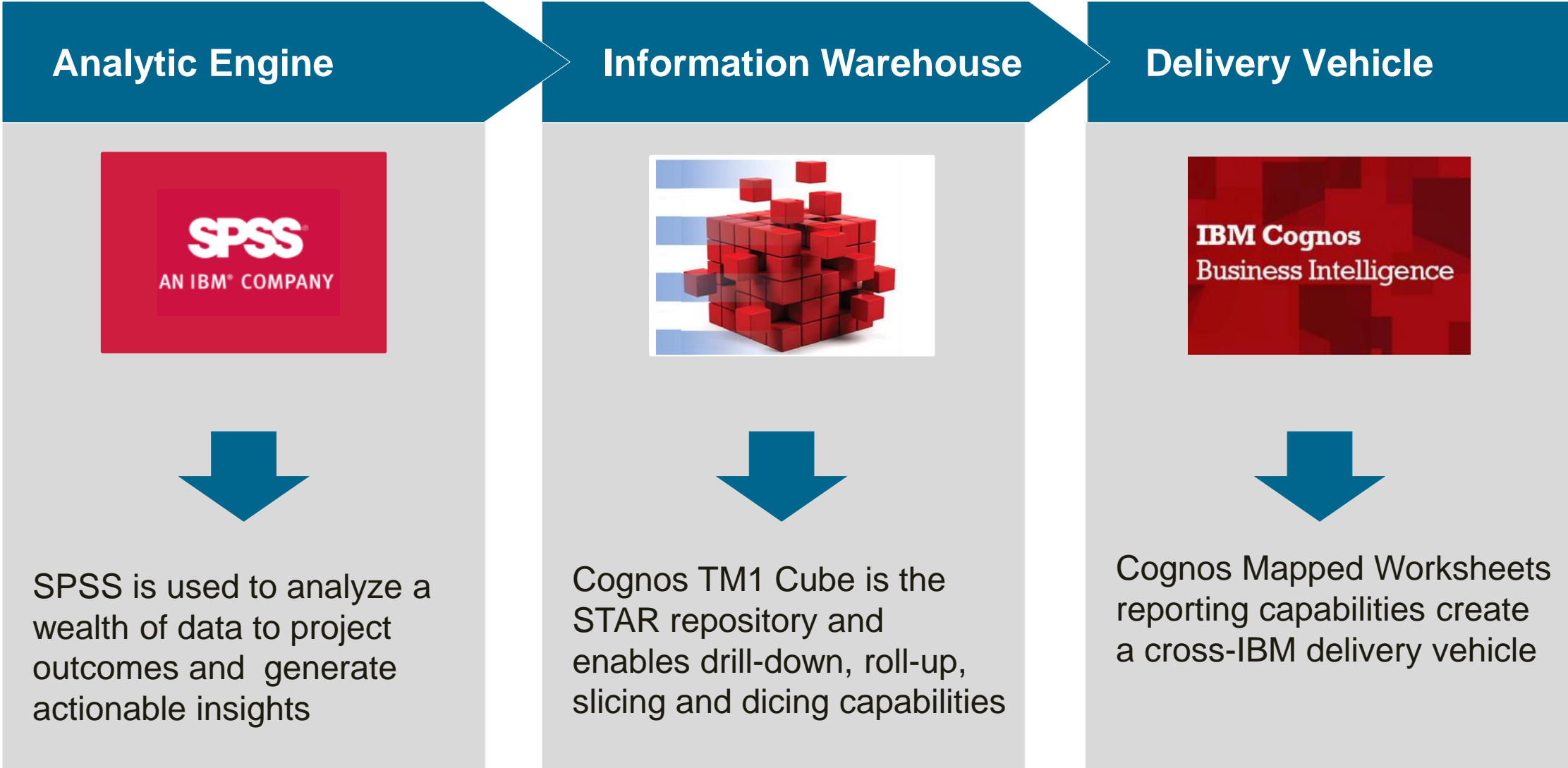
$\{x_t\}$ – raw data, $\{s_t\}$ – output of exponential smoothing

$$S_0 = X_0 \quad S_t = CxX_t + (1 - a) S_{t-1}, \quad t > 0$$

Where Cx is the smoothing factor, and $0 < cx < 1$

$$\begin{aligned} S_t &= cxX_t + (1 - cx)S_{t-1} \\ &= cxX_t + cx(1 - cx)X_{t-1} + (1 - cx)^2S_{t-2} \\ &= cx [X_t + (1 - cx)X_{t-1} + (1 - cx)^2X_{t-2} + \\ &\quad + (1 - cx)^3X_{t-3} + \dots + (1 - cx)^{t-1}X_1] + (1 - cx)^tX_0 \end{aligned}$$

STAR Scales Across the Enterprise



Workforce Analytics Drive Performance



Analytics and optimization engine to support end to end HR transformation

Workforce Planning

Talent Acquisition

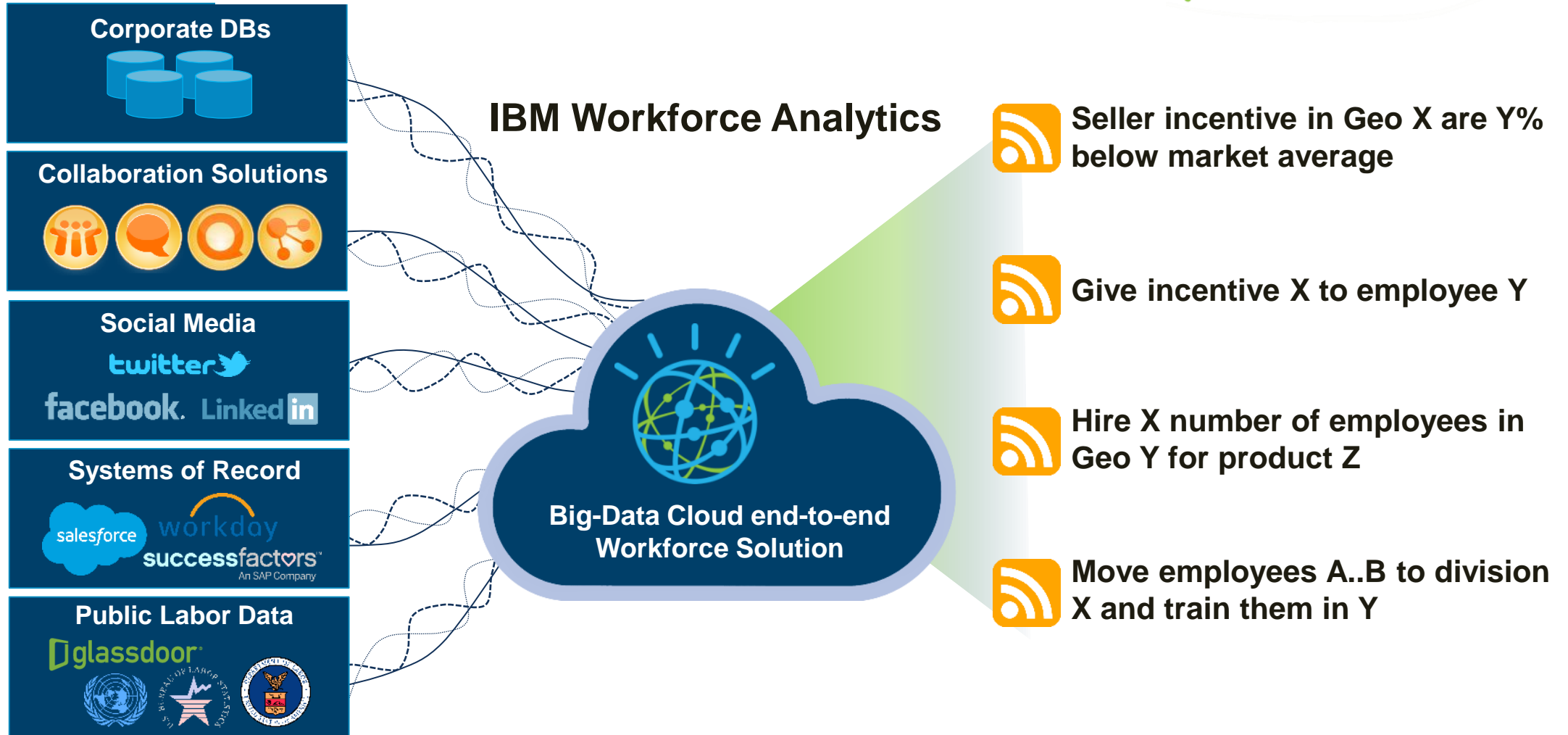
Talent Management

HR Operations



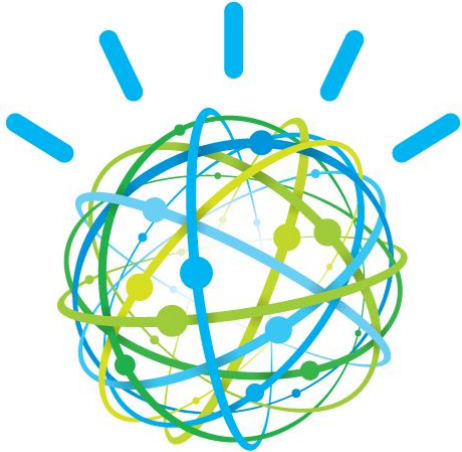
Analytics is the Link Across Data, Insight, and Value

DATA → INSIGHTS → ACTIONS



Big Data Sets Foundation

Clients Which clients sellers need to sell to?



Offering Which offerings sellers need to choose?

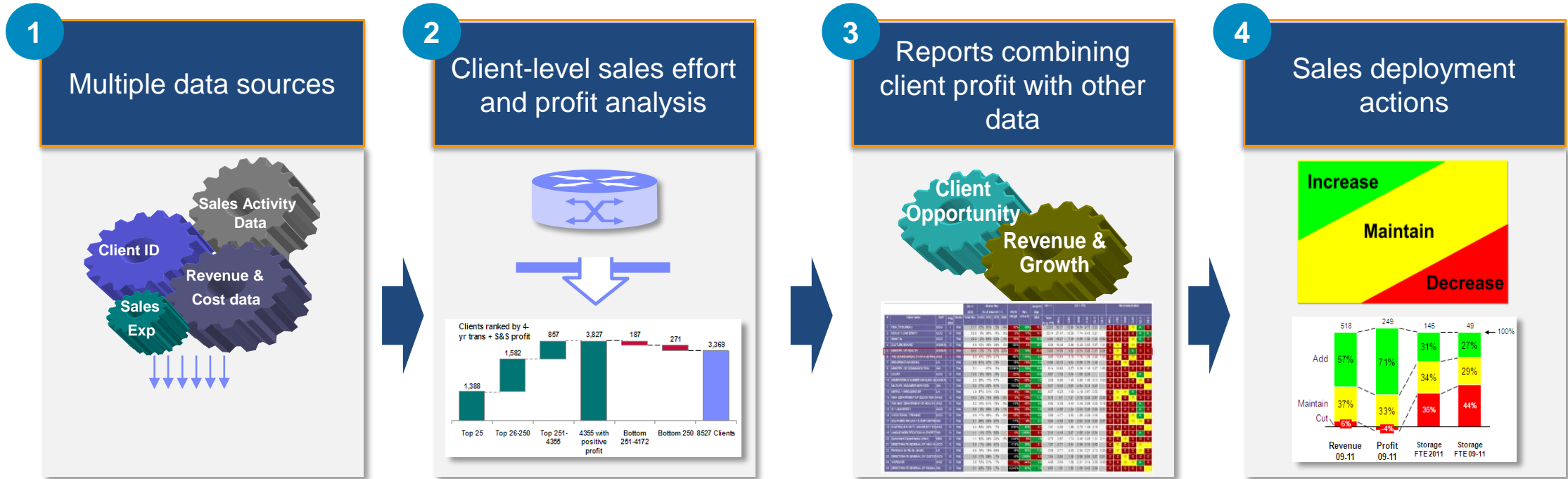


ACCENT* is the foundational Big Data tool build over time enabling a number of client-focused applications

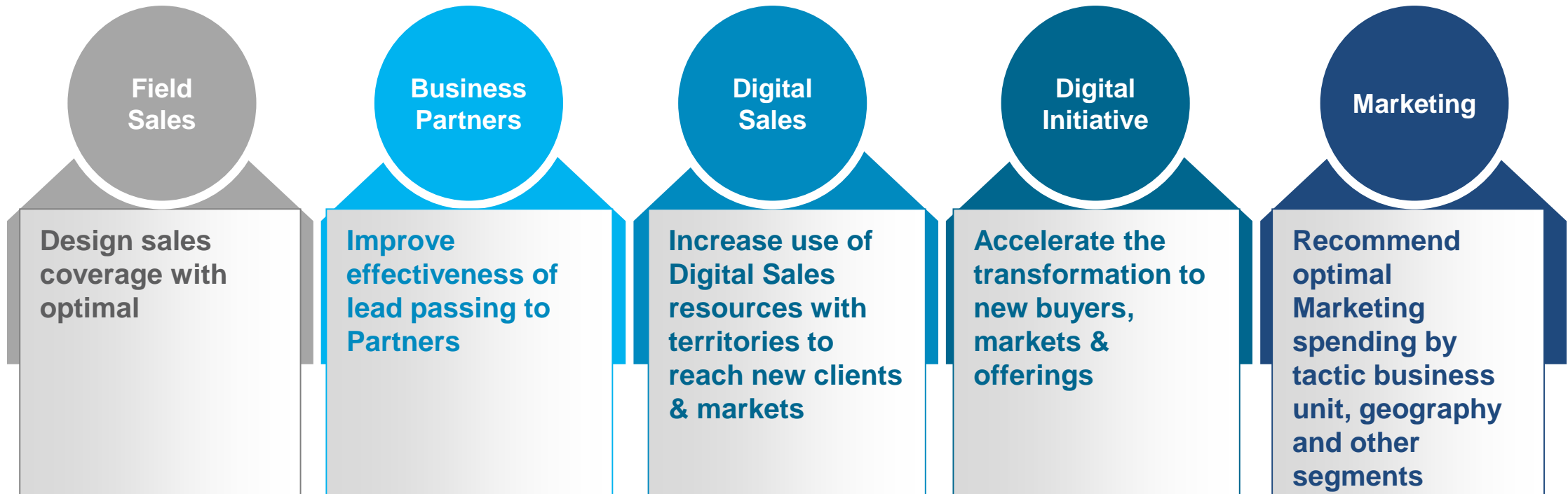
* **A**nalytics on the **C**ustomers and **C**overage for the **E**nterprise (ACCENT)



Sales Coverage Recommendation Engine



Optimize Routes-to-Market



Business challenge : Increase revenue from new buyers reached through alternate routes

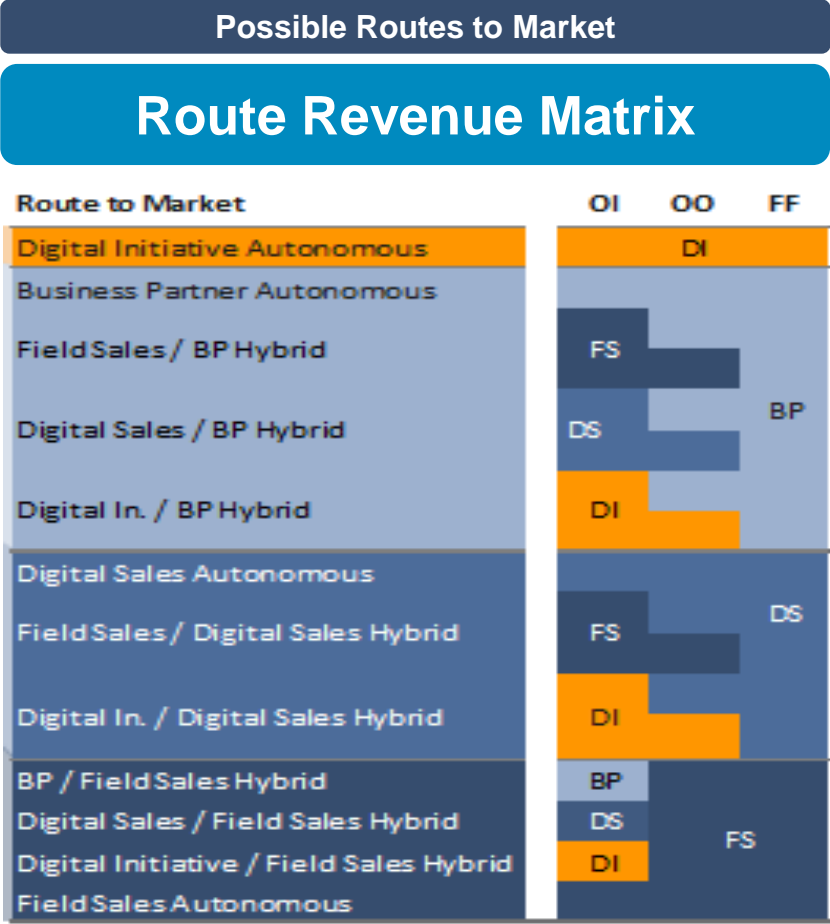
Solution:

- Predict and target growth opportunities
- Deliver recommendations prioritizing routes and optimizing
- Publish regular route-to-market revenue and expense performance



Routes-To-Market Reporting Drives Sales Transformation

Top Down Route-to-Market Model Methodology



Legend

FF	Fulfillment
OI	Opportunity Identification
OO	Opportunity Ownership
DI	Digital Initiative
DS	Digital Sales
BP	Business Partner
FS	Field Sales



Watson Cognitive Computing Capability

Discovery

- Create new insights and new value
 - *Protein P53*

Baylor
College of
Medicine®

Decision

- Provide bias-free advice semi-autonomously
 - *25,000 test case scenarios and 1,500 real-life cases*


WELLPOINT®

Engagement

- Interact and assist through understanding and reasoning of both content and context
 - *Transitioning to civilian life*


USAA®

Three Fundamental Building Blocks

Cognitive computing defines the **end user experience** of interacting with an intelligent system

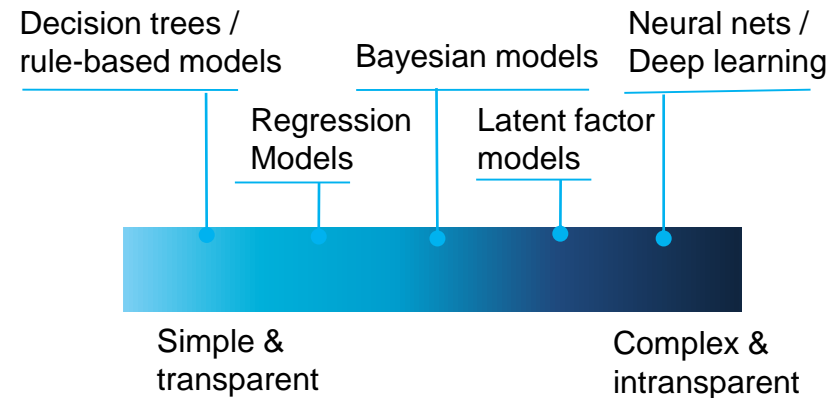
Data ingestion*

Unstructured data
(text, images, audio)

Natural language processing
Image recognition
Speech recognition

Structured data
(can be used as input of ML model)

Machine learning (ML) / reasoning**



Digital - human interface***

New ways of interaction with computing systems

- Ask questions in written language to gain insights (Google)
- Talk to the system (Siri, Amazon Echo)
- Convert the system output into spoken language



Offering and Solution Recommendation Engine

