From Insights to Impact:
Driving Enterprise Decisions With Business Analytics.

Aasim Aleem Kidwai - HP Global Analytics
Silicon India - Business Intelligence Conference, New Delhi
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Agenda

- Global trends driving enterprise imperatives

- Data Analytics driving agility in decision making

- Analytics @ work

- Key learnings

Analytics is emerging as the new basis of competition

	Scarce resources	Operational efficiency	Focused innovation	Analytics
Basis of competition	• Access to and control over input factors e.g.: • Labor • Property, Brand • Funding	• Operational efficiency & process understanding e.g.: • Cost of conversion • Cycle time • Economies of scale	• Product design and marketing e.g.: • Design and prototyping skills • Idea pipeline mgmt	• Data understanding and decision sophistication e.g.: • Information Explosion • Analytics infrastructure • Analytics skills and processes
Examples	**Mastercard** • License fees associated with vendor / cash network acceptance **BHP-Billiton** • Control over coal mines for energy and utilities business	**Acer** • Outsourced manufacturing and indirect sales **Wal-Mart** • Procurement and distribution efficiency	**Apple** • New products (iPhone, iPad) with ecosystem (AppStore, iTunes) **Google** • Extension of core product (search) to new categories	**Amazon** • Customer analytics to recommend products and improve buyer experience

Macro Trends influencing enterprises today ...

1. Economic Volatility	2. Emerging Markets	3. Population Growth

- Fiscal stress in world economy
- Surge in commodity prices

- Growth in emerging markets- BRIC & beyond

- Swelling 1.2 Bn middle class consumers by 2020

4. Connected world	5. Competitive pressures	6. Environment sustainability

- 2 billion people online
- 24 Bn devices by 2020

- New competitors shaping new markets

- Global warming leading to high intensity hurricanes, Tsunami

Exposing enterprises to potential uncertainties ...

Bottom-line erosion	Competing products	Supply unavailability

Brand reputation	Customer loyalty ?	Supply chain network failure

Organizations need to sense these uncertainties

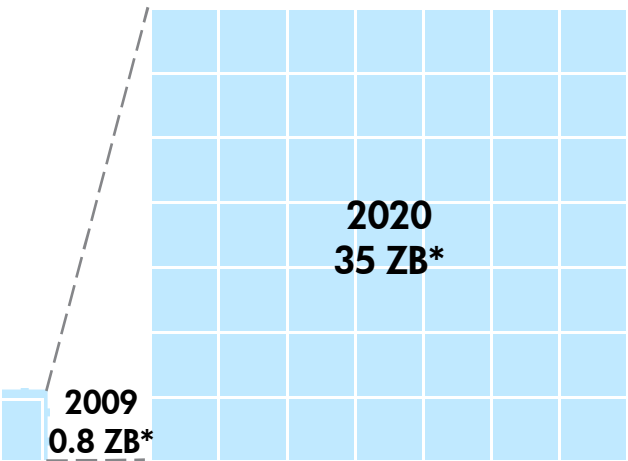| Track & Trace	Analyze and Decide	Predict and respond
• Measure and Monitor	• Event Triggers	• Optimization

... To make decisions with speed and convert them into opportunities

Enterprises today are exposed to data explosion ...

44x growth	Multiple Forms

Structured data
15% share, 20% growth

Unstructured data
85% share, 60% growth

2020
35 ZB*

2009
0.8 ZB*

Web-logs, Articles

facebook

Linkedin.

Social networks

Documents

Transaction data

YouTube

Videos

Email

* ZB: Zettabytes = 1 trillion gigabytes
Source: IDC. (Digital Universe). May 2010.
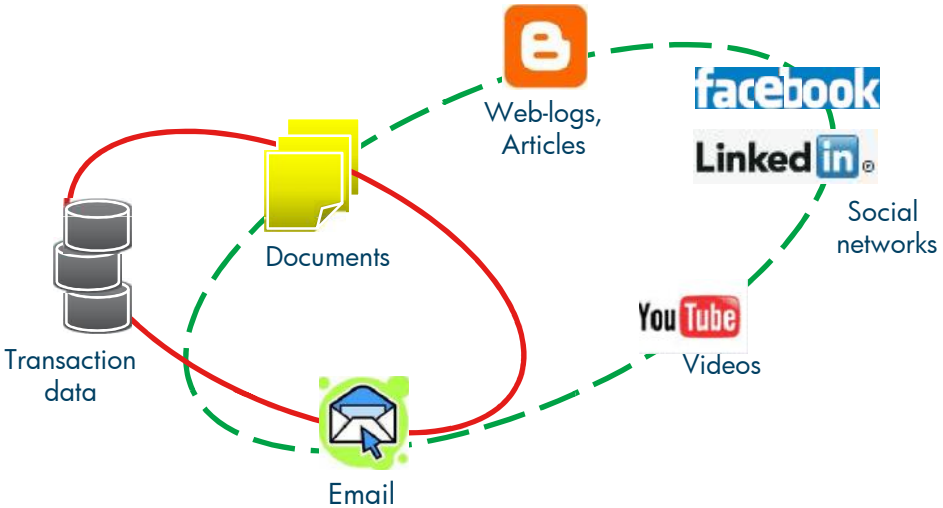
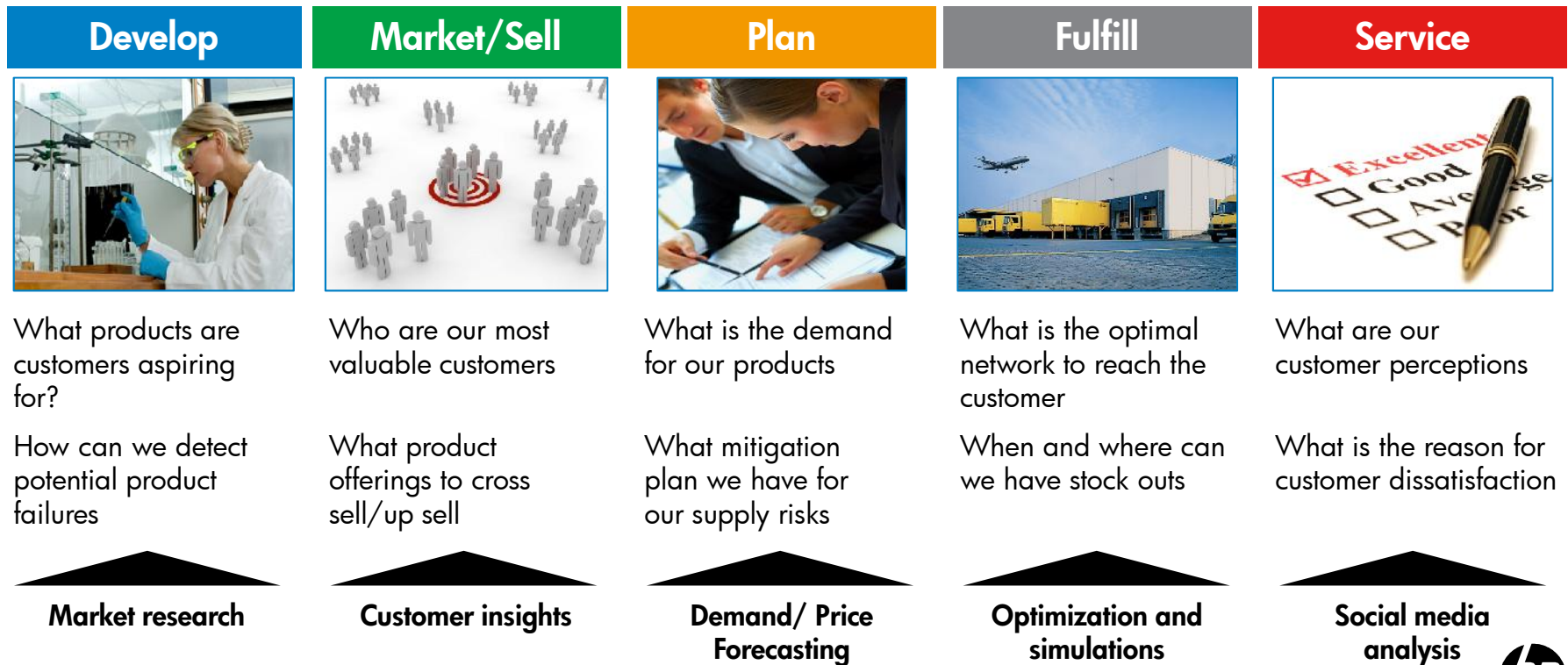## ... and the associate opportunity to harness the power of analytics to predict the future and make better, faster decisions

Pro-active decision making across the enterprise value chain will need data driven insights ...

Develop	Market/Sell	Plan	Fulfill	Service

What products are customers aspiring for?

How can we detect potential product failures

Market research

Who are our most valuable customers

What product offerings to cross sell/up sell

Customer insights

What is the demand for our products

What mitigation plan we have for our supply risks

Demand/ Price Forecasting

What is the optimal network to reach the customer

When and where can we have stock outs

Optimization and simulations

What are our customer perceptions

What is the reason for customer dissatisfaction

Social media analysis

Need to Establish a global framework for driving predictive analytics across the enterprise

DATA → INFORMATION → KNOWLEDGE → **ACTION**

1. COLLECT: What data?	2. VISIBILITY: What happened?	3. INSIGHT: Why did it happen?	4. PREDICT: What could happen?
DATA ACQUISITION & INTEGRATION	QUERYING & REPORTING	RESEARCH AND INTERPRETATION	ADVANCED ANALYTICS & MODELING

... To Drive Business Value

TARGETED GROWTH + **OPTIMIZE COSTS** + **FREE UP CASH FLOW** + **IMPROVE CUSTOMER EXPERIENCE** + **IMPROVE PRODUCT QUALITY**

Analytics@work: Specific solutions implemented at HP to enable agility and responsiveness

Develop	Market/Sell	Plan	Fulfill	Service

Market sizing

Customer targeting engine

Demand Forecasting

Stock-out prediction model

Social media analysis

Quality analytics

Price optimization

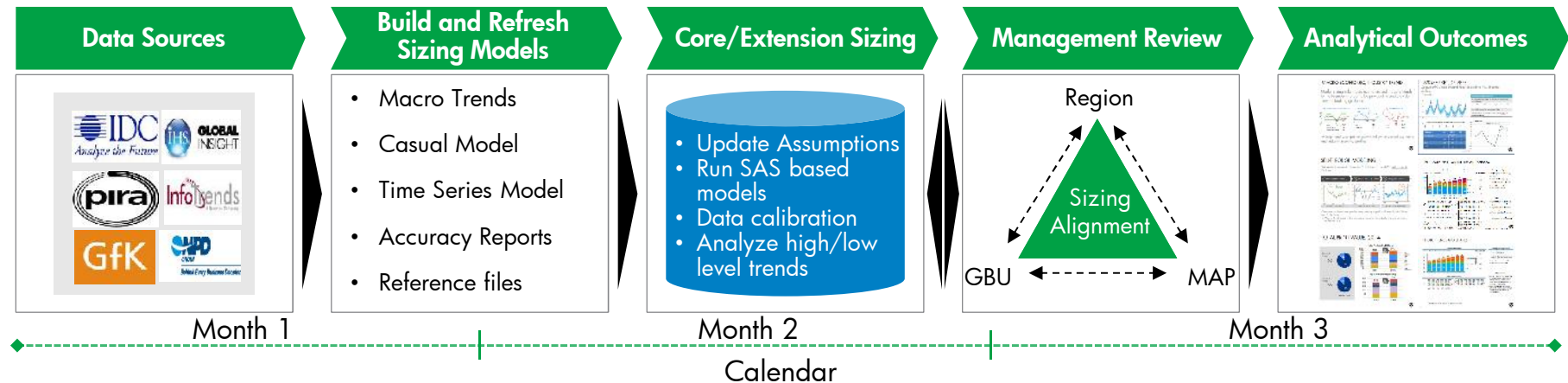Procurement risk management

Network optimization

Market Size Forecasting

Business Questions
- What are the macro-trends playing in the market?
- How does that impact our market size estimate?
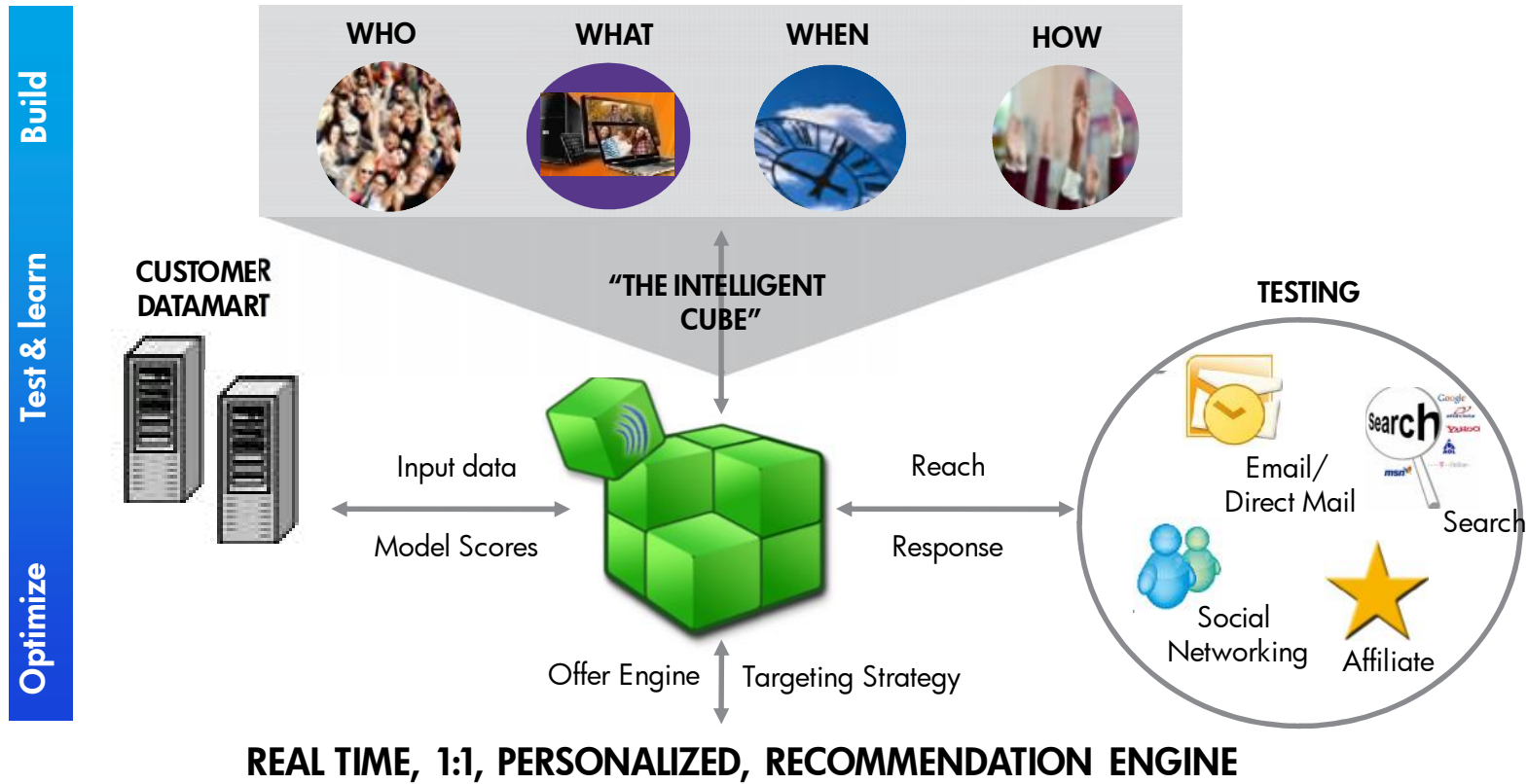- How does the company performance match up with size estimates and goals?

Data Sources	Build and Refresh Sizing Models	Core/Extension Sizing	Management Review	Analytical Outcomes
	• Macro Trends • Casual Model • Time Series Model • Accuracy Reports • Reference files	• Update Assumptions • Run SAS based models • Data calibration • Analyze high/low level trends	Region Sizing Alignment GBU MAP	

Month 1   Month 2   Month 3

Calendar

Benefits
- Improved business planning
- Better sales quota allocations
- Focused sales & marketing strategies

Customer targeting engine

Build | **Test & learn** | **Optimize**

WHO   WHAT   WHEN   HOW

CUSTOMER DATAMART

"THE INTELLIGENT CUBE"

TESTING

Input data

Model Scores

Reach

Response

Email/ Direct Mail   Search

Social Networking   Affiliate

Offer Engine | Targeting Strategy

REAL TIME, 1:1, PERSONALIZED, RECOMMENDATION ENGINE

Deal pricing – Big deal discount allocation

Business Questions	• How can we avoid margin leakage during tactical deal approval process? • How can I reduce deal approval turn-around-time?

1. Collect & process inputs

- Discount Guidelines
- Revenue/ Margin Goals
- Deal details

2. Determine price band to operate @ Deal/ Product Group level
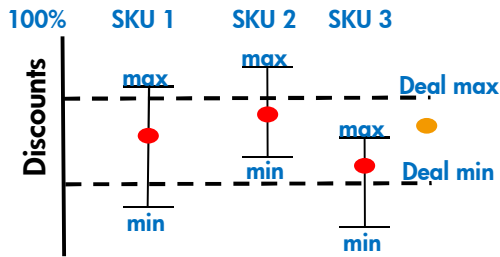
3. Optimally allocate discounts

$$x_{n+1} = x_n - \frac{f'(x_n)}{f(x_n)}$$
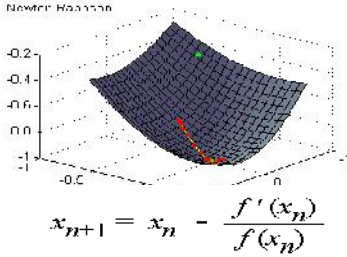
4. Price deals using optimal discounts

Benefits	• 1% margin improvement • Reduced Pricing Turn around time • Reduced escalations • SOX compliance

Traffic Forecasting for HP's online store

Business Questions	• What are the key drivers of traffic? • How can we increase forecast range and accuracy?

Hpdirect.com   **1. Analyze Traffic Trends**   **2. Overlay Mktg Activities**   **3. Develop Forecast Models**   **4. Develop user interface**
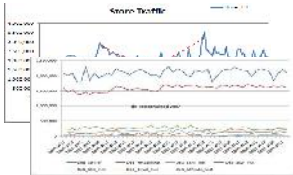
$$\hat{Y} = \alpha + \sum_{t=1}^{n} X_t . B_t$$

Benefits	• Increased forecast range to 12 weeks • Enhanced weekly longer term forecast accuracy of up to 95% • Identified key marketing activities contributing majority of traffic

Procurement Risk Management

Business Questions	• Need to reduce spend and exposure on memory in a speculative market • Purchase strategy: when to buy vs burn

1. Forecasting the memory prices

Forecast memory prices using econometric models.
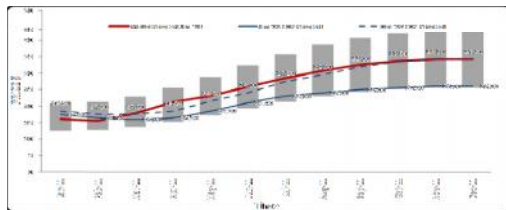
2. Predict market turns

Predict long term and short term trends of memory prices

3. Strategic P&L recommendations

Make recommendations on time and quantity to impact P&L.

Benefits	• Improvement of price forecast accuracy by 20% • Current forecast accuracy of 90% - 95%

Stock out prediction model

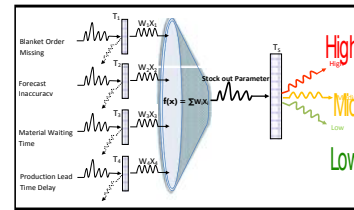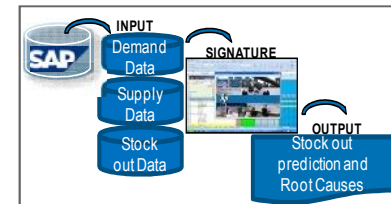| **Business Questions**	• Stock outs estimated to lead to revenue Loss of $21m and also impact service levels and good will • Modeling involved 16 countries, 2000 products, 15 product lines, 45 retail partners

1. Analyzed stock out scenarios	**2. Identified root causes for stock outs**	**3. Developed stock out prediction algorithm**	**4. Implement and institutionalize model**
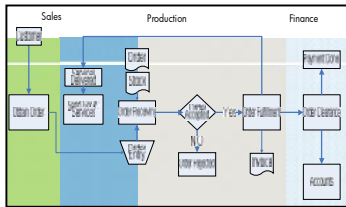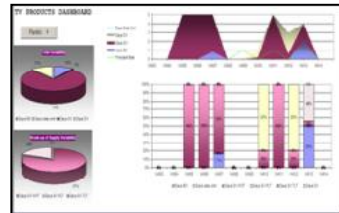
Benefits	• Stock outs reduced from 5% to 2 % • Revenue Increase of $12 m in 1st year • First Prize at "Innovation Tournaments" at Wharton Business School

Social Media Analysis
Enhancing Customer Experience

Listening	Analyzing Trends	Actions/Outcomes

Listening:
Content/wk — 7Bn Pieces
Tweets/hr — 4Mn
Views/day — 2Bn

Listening to online conversations to understand themes, pitch and intensity of online content

Analyzing Trends:
Analyze conversations to get qualitative insights on queries/complaints on HP products

Actions/Outcomes:
• Early Warning Signals ⬆
• Product Innovation ⬆
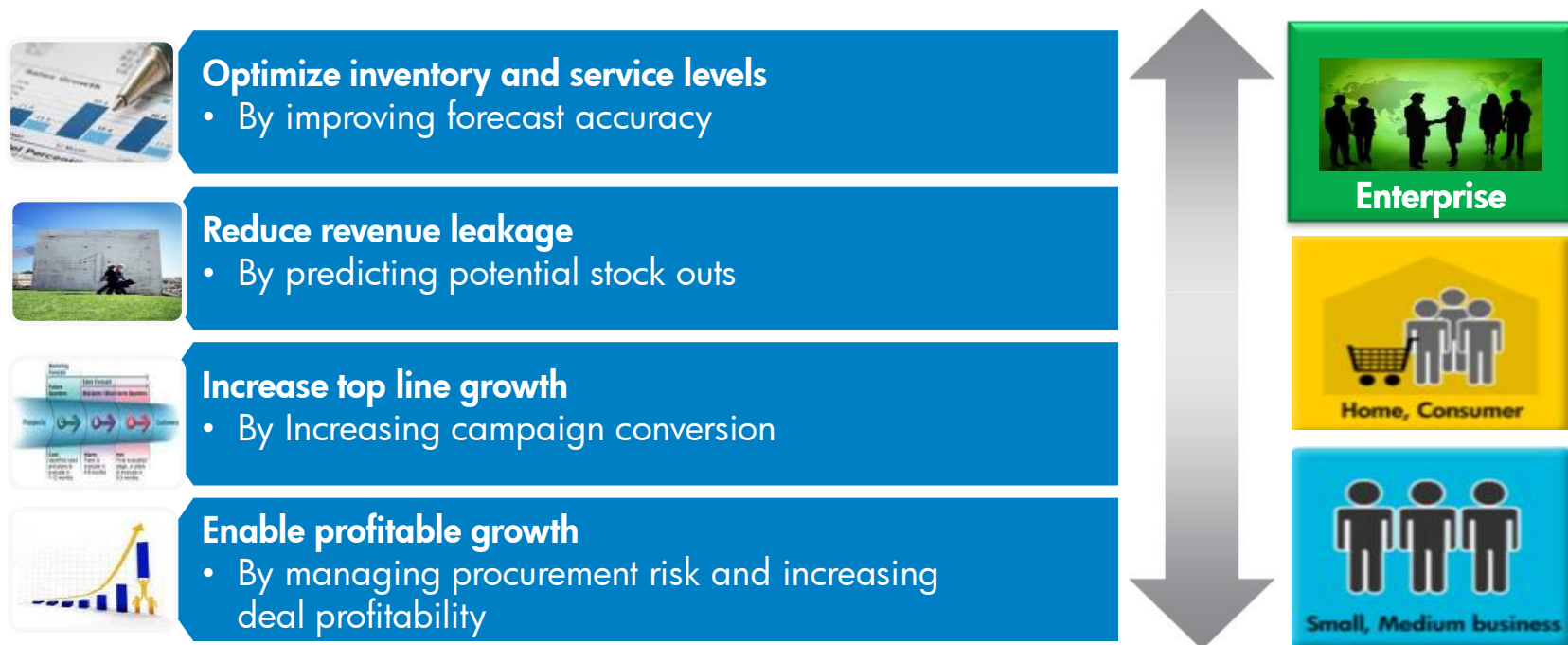• Customer Satisfaction ⬆
• Customer Engagement ⬆

Capture customer insights for designing better products and improving customer experience

Benefits	• Better early warnings related to product quality, customer experience • Enhanced customer engagement and understanding of brand perception

Impacting Key business Levers

Enabling top line and bottom line Growth across the enterprise

Optimize inventory and service levels
- By improving forecast accuracy

Reduce revenue leakage
- By predicting potential stock outs

Increase top line growth
- By Increasing campaign conversion

Enable profitable growth
- By managing procurement risk and increasing deal profitability

Enterprise

Home, Consumer

Small, Medium business

Enterprise approach to build a sustainable analytics ecosystem

| **Develop Capability** | **+** | **Build Partnerships** | **=** | **Create Value** |

- Skilled Analytical Talent
- Domain/subject matter expertise
- Develop analytics solution
- Invest in tools and techniques

- Build credibility with stakeholders
- Collaboration with IT teams
- Alliances with Industry bodies

- Develop IP and institutionalize
- Drive business impact
- Enable process effectiveness

Change management & Executive Sponsorship

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THANK YOU