

IBM



# Analytics Forum

Transforming Industries and Professions 2015

## How Analytics is Making a Difference



IBM



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Transforming Industries and Professions 2015

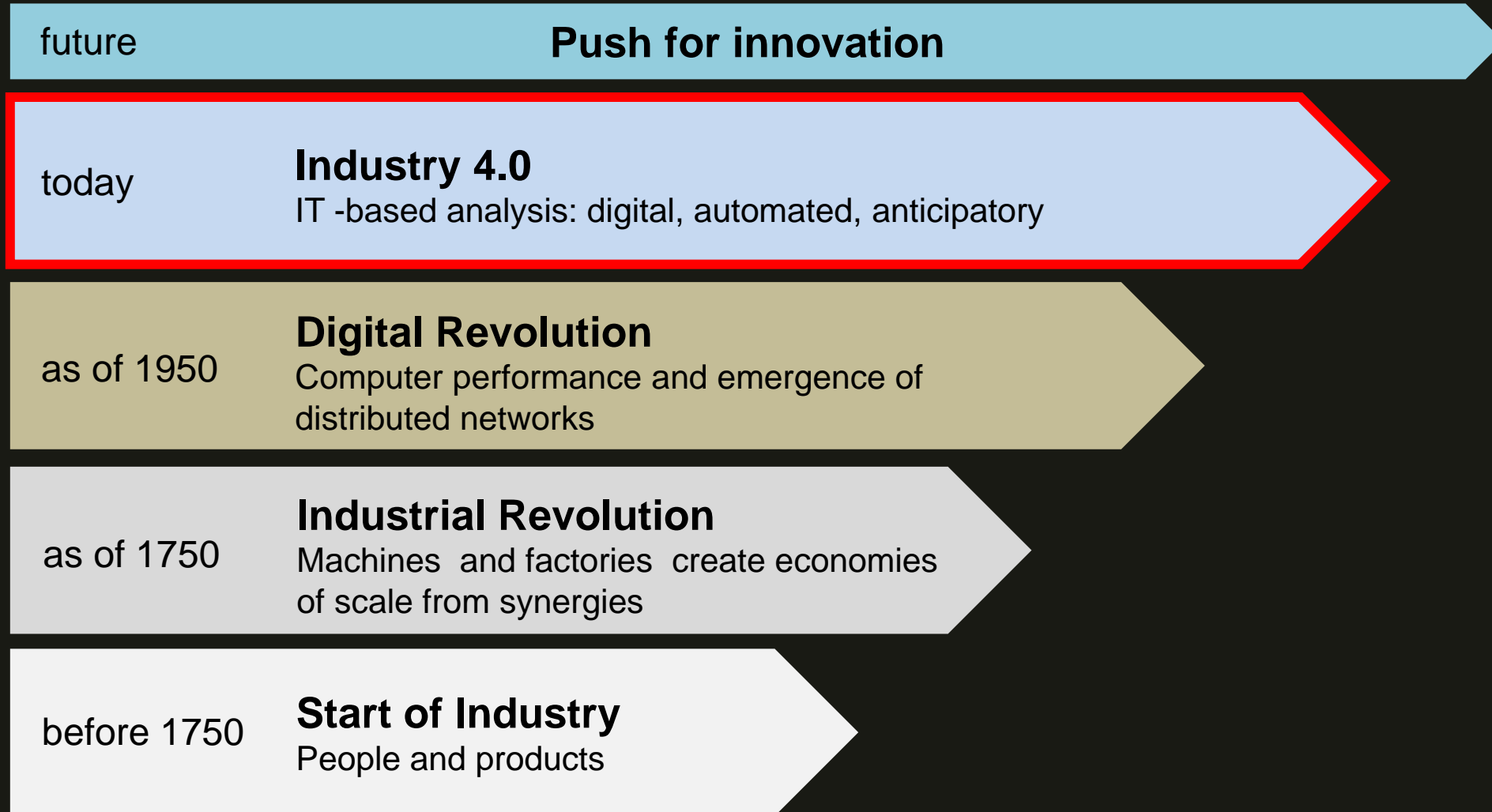


**Matthieu Van Bilsen**  
Industrial Sector Leader

**IBM Asia Pacific**



# The Factory of the Future will be shaped by the 4<sup>th</sup> Industrial Revolution



# Technologies provide a solid platform for the Factory of the Future

## Environment



Weather Monitoring,  
Utilities supply  
Optimization

## Workforce



Employee Tracking, Health  
Monitoring

## Material



Material Flow, Part Quality  
Notification

## Equipment



Equipment sensing,  
anomaly Detection

## Customer



Customer Services,  
Collaboration



Big Data



Advanced  
Analytics



Cloud



Mobile



Social  
Business

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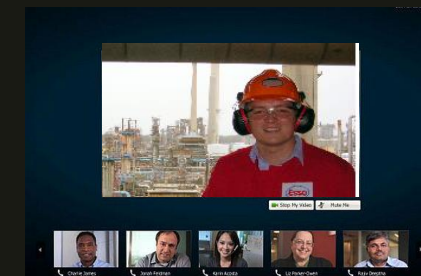
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Today, many transactions are recorded in real time.

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Nearly **everything** is instrumented.



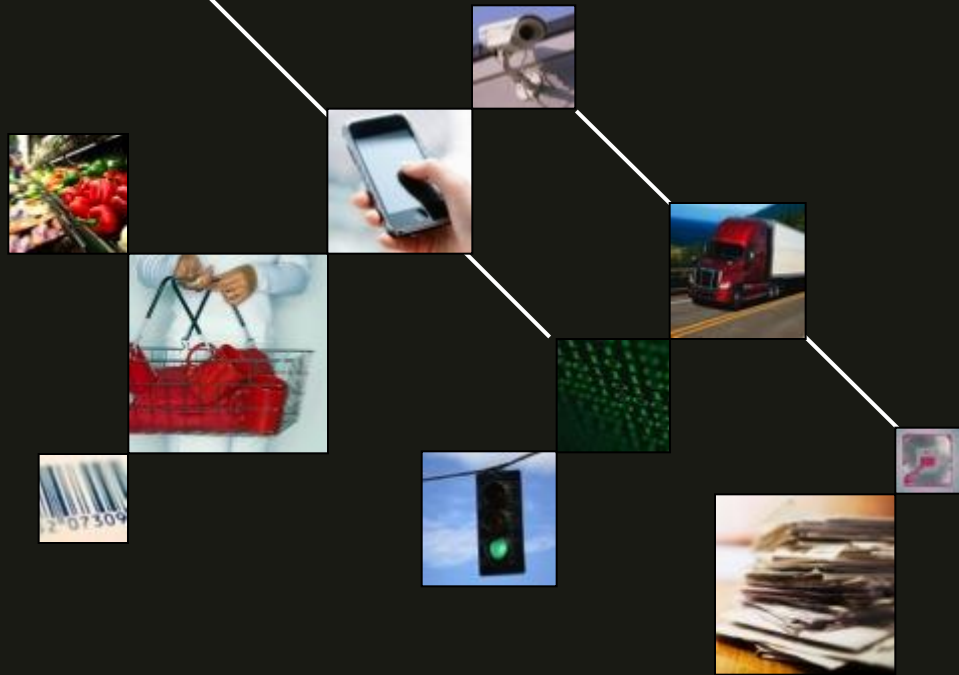
Even individual needs, wants,  
opinions and preferences

are captured



Creating a  
proliferation of

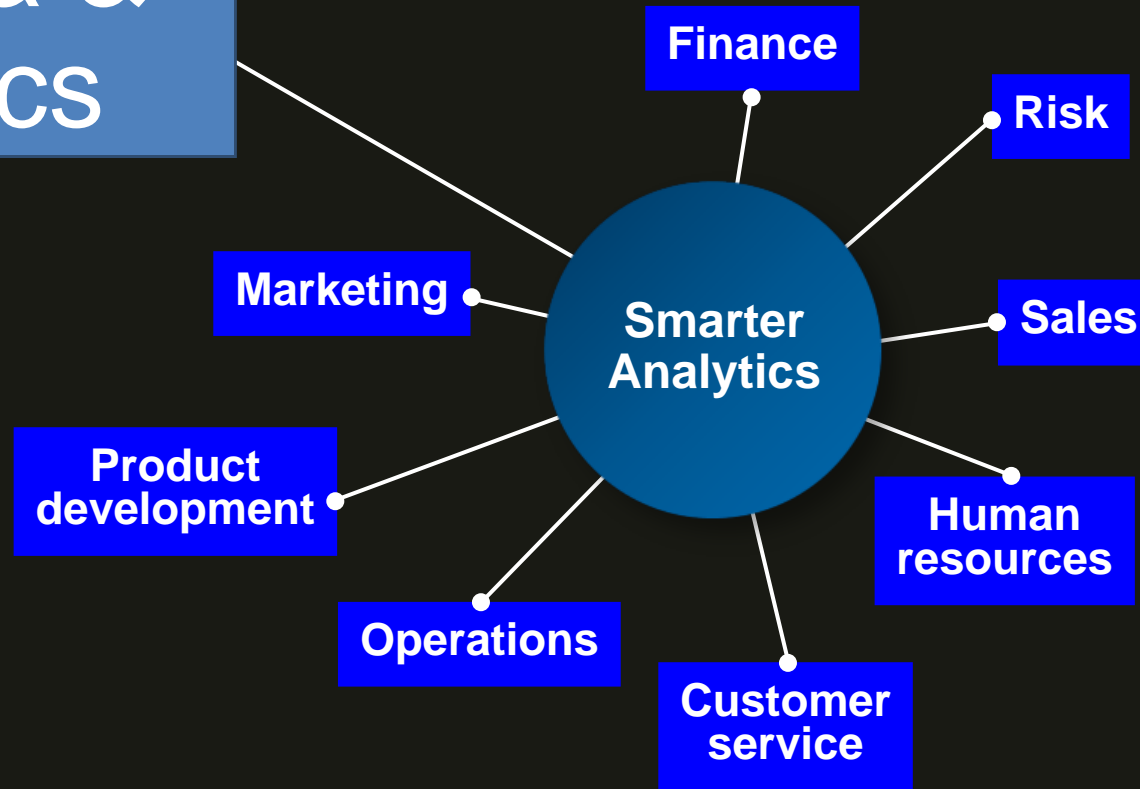
# Big Data





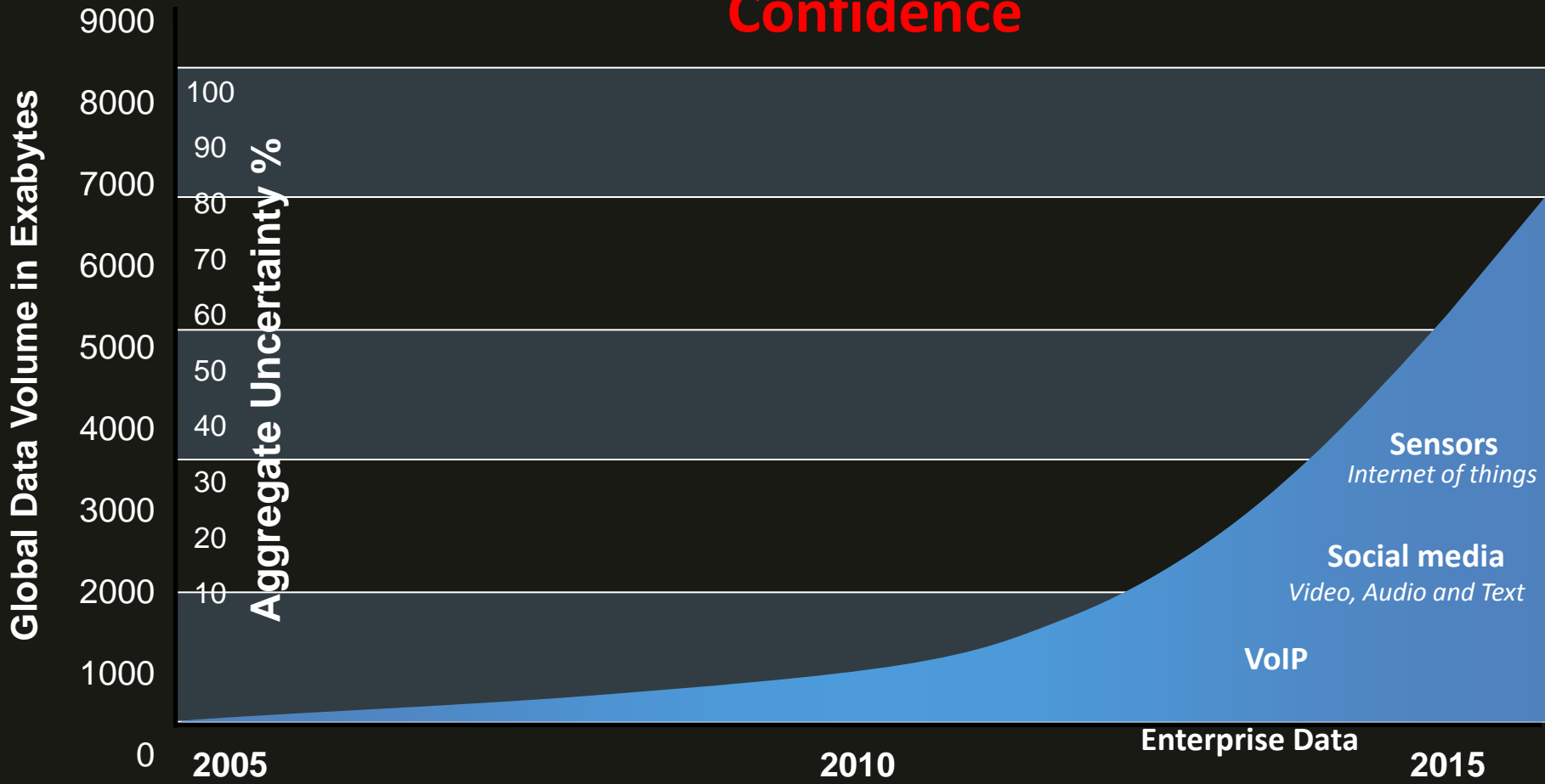
Fueling the need for a smarter approach to

# Big Data & Analytics



# However about 80% of All Available Data is Uncertain

**Rising Uncertainty = Declining Confidence**



Multiple sources: IDC, Cisco

**1 in 3**  
Make decisions on untrustworthy data

**1 in 2**  
Lack the information that they need

**60%**  
Have too much data

# To Manage Risk and Create Agility: Embrace All Data

*....Uncertainty of New Information is Growing Alongside its Complexity*

## Volume



### Data at Scale

Terabytes to Petabytes of data

## Variety



### Data in Many Forms

Structured, unstructured, text, multimedia

## Velocity



### Data in Motion

Analysis of streaming data to enable decisions within fractions of a second.

## Veracity



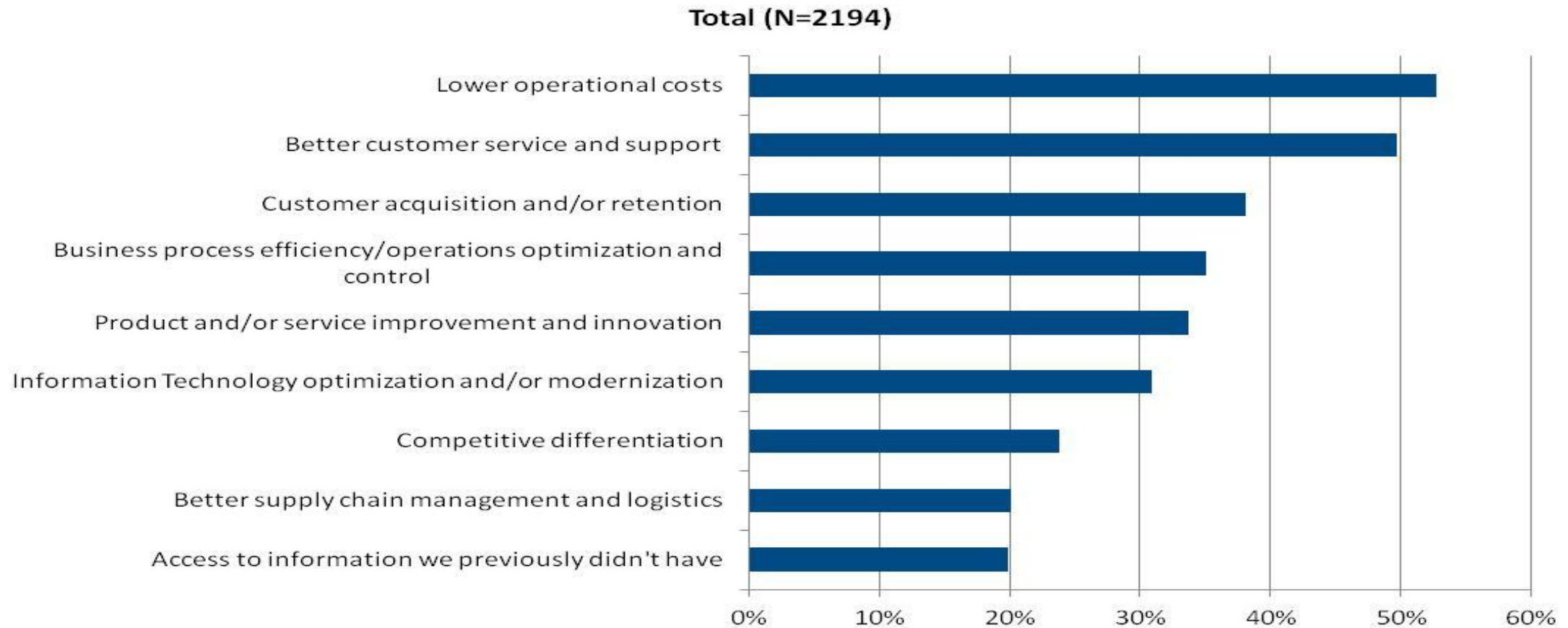
### Data Uncertainty

Managing the reliability and predictability of inherently imprecise data types.

# Internet of Things Adoption Drivers



Which of the following areas have been identified as significant drivers of your organization's Internet of Things initiatives over the next 12 to 24 months?



# POSCO, a multinational steel-making company uses IBM Predictive Maintenance and Quality for two Hot Coil factories



## Business Needs

How to improve manufacturing quality by utilizing the machine & condition data captured by 200+ sensors

## Solution

- Analytics foundation to establish POSCO's robust manufacturing environment
- Implementing IBM Predictive Maintenance and Quality, POSCO gained the ability to model and analyze large volumes of data from database and apply real time analysis.

## Benefits.

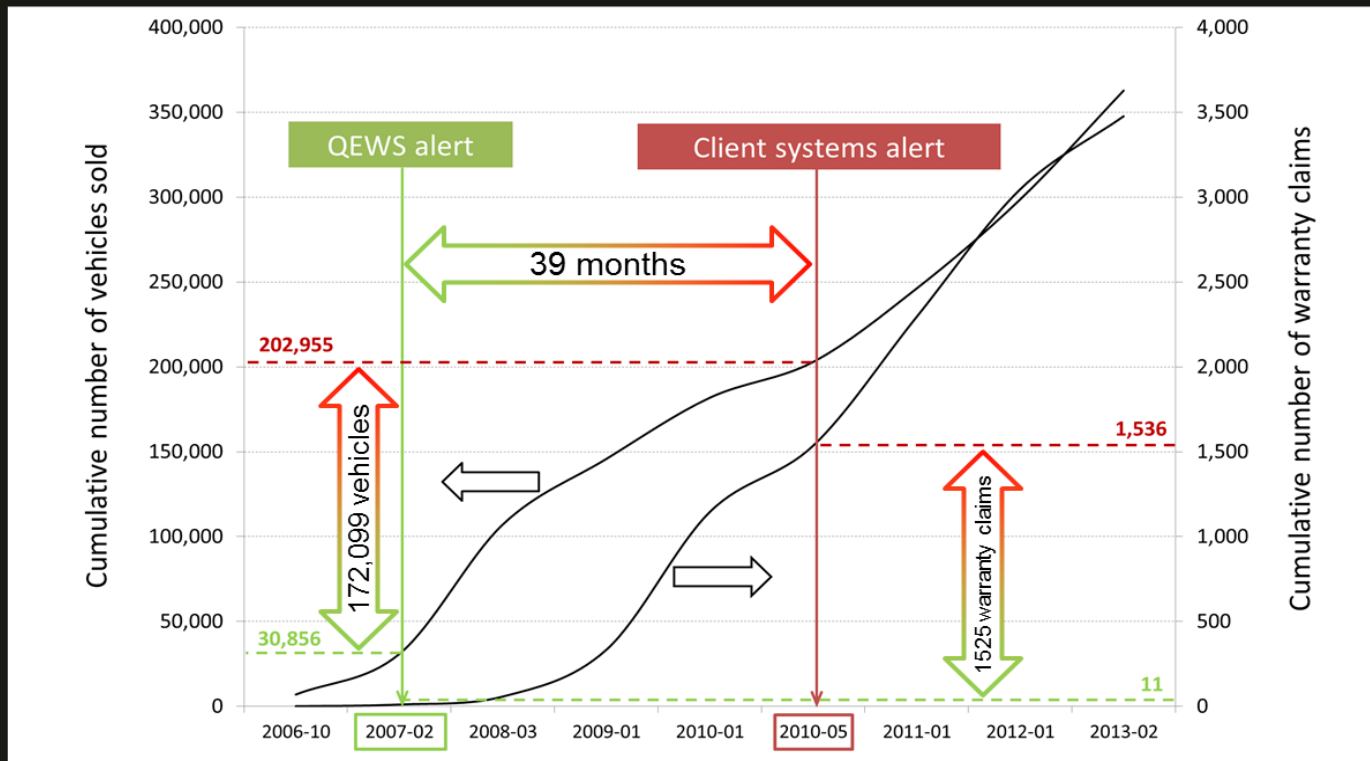
- POSCO can identify possible issue/problem in machine before it occurs so that they can prepare and relief impact on manufacturing process.
- POSCO can save cost of operations by reducing unexpected downtime/system error and increase revenue by high quality product

**+1.4m\$ cost saving a year**

**65% prevention ratio on manufacturing machines & equipment failures**

# Predicting Quality Issues at a Global Car Manufacturer

- Has anything changed enough to require action?
- The algorithm detected a problem in warranty claims data 39 months earlier than the clients' existing systems
- By the time the clients' systems detected a problem, an additional 172k vehicles had been sold and an additional 1.5k warranty claims had been made



# Leading Indian Automotive OEM Transforms Spare Parts Planning

## Challenge

### Forecasting Issues

- ✓ basic forecasting techniques inaccurate
- ✓ High plan deviations
- ✓ Important information not captured
- ✓ No defined forecasting

### Inventory Issues

- ✓ Sub-optimal inventory leading to excess inventory & poor service levels
- ✓ Lack of multi-echelon inventory optimization
- ✓ Absence of what-if analysis in planning
- ✓ Limited visibility in inventory performance

## Solution

### Scientific Forecasting

- ✓ Statistical forecasting techniques to manage changing demand patterns
- ✓ Detection of abnormal demand and building model to manage abnormality
- ✓ Part profile based new parts forecasting
- ✓ Forecasting effectiveness KPIs for managing exceptions

### Inventory Optimization & Simulation

- ✓ Stocking strategy based on multi-factor analysis
- ✓ Multi-echelon inventory optimization for distributed stocking
- ✓ Optimal inventory norms based on inventory planning parameters
- ✓ Simulation of inventory norms to assess impact on service ration and inventory level
- ✓ Inventory related KPIs for regular review

## Business Benefits

- Improved Forecast Accuracy
- Optimized Inventory Levels
- Consistent Service Levels
- Result Analysis and Improvement Opportunities
- Supply Chain Flexibility
- Ease of use



# Coca-Cola applies Analytics to avoid loss of sale.

Distributor's equipment across their region  
Colors indicate an issue

Predictive statistics for selected machine

**Southeast Beverage Distributors**

**Equipment Locations**

- Southeast Region
  - Atlanta
    - Lenox Square
    - Hartsville Airport
    - Burger King 1
    - Subway
    - Atlanta Bread Co.
      - Motor
      - Belt Drive
      - Nozzle
      - Dispenser
    - McDonalds
    - Burger King 2
    - Burger King 3
  - Athens
  - Columbia
  - Greenville

**Equipment Status**

Location: Atlanta Bread Co., Concourse C  
 Model: FS-2732A  
 Fault Status: Cartridge 1  
 Prediction: 2 days until failure

**Cartridge replacement predictions**

Date	Value
Jun-10-54	~50
Mar-11-46	~40
Oct-17-20	~55

**Recommended Actions**

Action	Parts
Replace cartridge 1 within 2 days	Cartridge 01-2289
Clean intake filler	NA
Check belt drive	NA

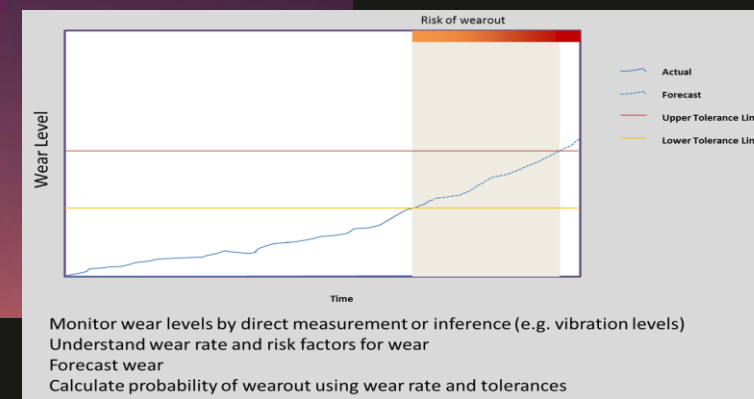
IBM Predictive Maintenance | April 22, 2013 09:43:21

Recommended corrective actions



# Airline Engine Manufacturer Innovates business model by Applying Analytics and Condition Monitoring

- 95% Ability to **predict in-flight shutdowns** within a year
- 97% Ability to **predict on-ground major incidents** within 12 weeks



In conclusion, companies need to answer several fundamental questions in order to succeed in the *Internet of Things* era.

**What if I could predict** which part or system is about to fail?

**How can better financial and demand data** improve the performance of my business?

**How do I ensure** that inventory is maintained at optimal levels?

**How can I be alerted** when there are constraints in my supply chain ... with enough time to fix the issue?



**How can I change my** business model?

**How can I differentiate** in the market?

**How do I increase** my customer service levels?

**How can I increase** customer loyalty?



Thank You

