Christian Klezl
IBM

Big Data and Analytics
Challenges and business models in a digital world

"Data is the new Oil.
Data is just like crude. It's valuable, but if unrefined it cannot really be used."
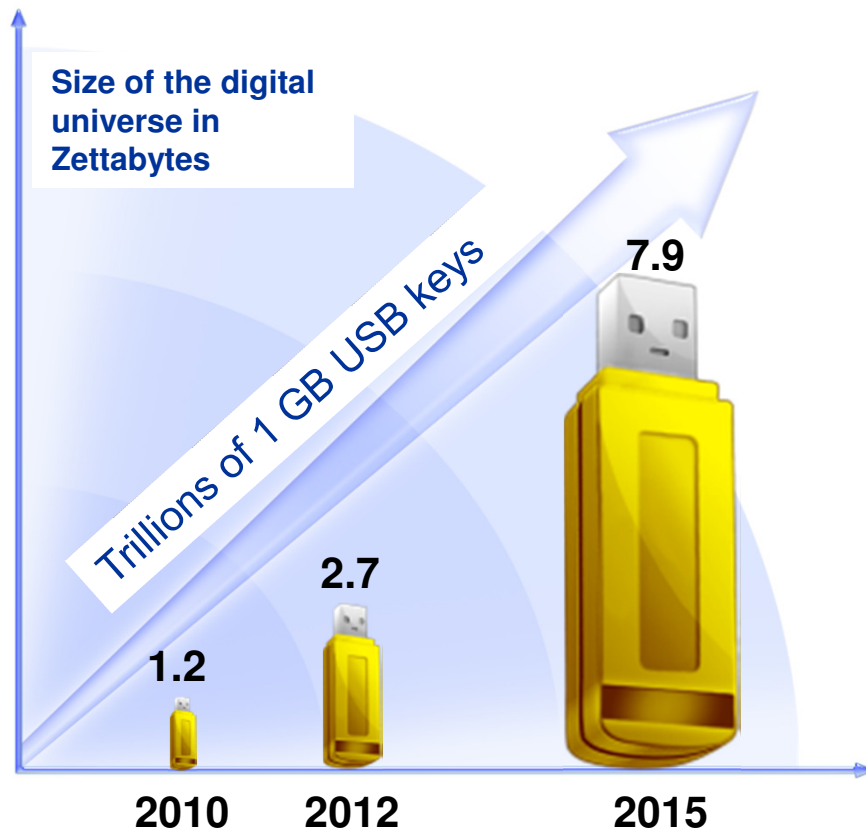– Clive Humby, DunnHumby

"We have for the first time an economy based on a key resource [Information] that is not only renewable, but self-generating. Running out of it is not a problem, but drowning in it is."
– John Naisbitt

The potential for insight is there ...

New wave of opportunity ...

Size of the digital universe in Zettabytes

Trillions of 1 GB USB keys

7.9

2.7

1.2

2010   **2012**   **2015**

... However, there are challenges

1 in 3 Organization leaders frequently make decisions based on information they don't trust, or don't have

1 in 2 Organization leaders say they don't have access to the information they need to do their jobs

60% of CEOs agree they have more data than they can use effectively

And the rewards are compelling...

Analytically sophisticated companies outperform their competition

Respondents who say analytics creates a competitive advantage

2010 | **37%** | **57%** increase

2011 | **58%**
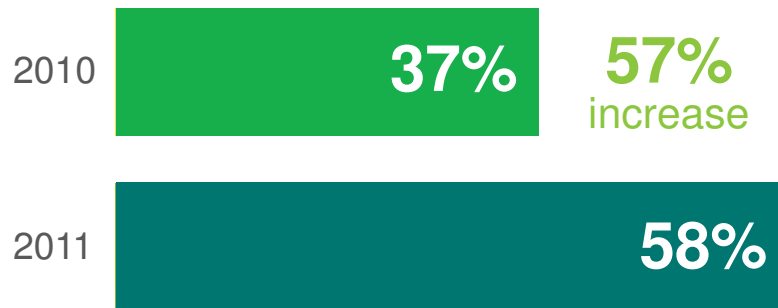
Organizations achieving a competitive advantage with analytics are

2.2x

more likely to **substantially outperform their industry peers**

And they can even be touching...

What if...

You could detect a neonatal infections sooner?

What if...

You could reduce crime by directing police resources?

What if...

You could affect whether a young person contributes society or not?

24 hour
earlier detection of infections

30 percent
reduction in serious crime

50 percent
success rate with intervention cases

Big Data expands the opportunities for insight enabling business model transformation

Volume

12 terabytes

of Tweets create daily

Analyze product sentiment

350 billion

meter readings per annum

Predict power consumption

Velocity

5 million

trade events per second

Identify potential fraud

1.5 billion

call detail records per hour

Prevent customer churn

Variety

100's video feeds

from surveillance cameras

Monitor events of interest

80% data growth

are images, video, documents…

Improve customer satisfaction

New business models can emerge from new technologies

Phase 1:

Incremental Improvement

Phase 2:

Creative Exploration

Phase 3:

Business Model Transformation

Filming Plays

Movie Production

Media & Entertainment

Apply new technology to existing paradigm
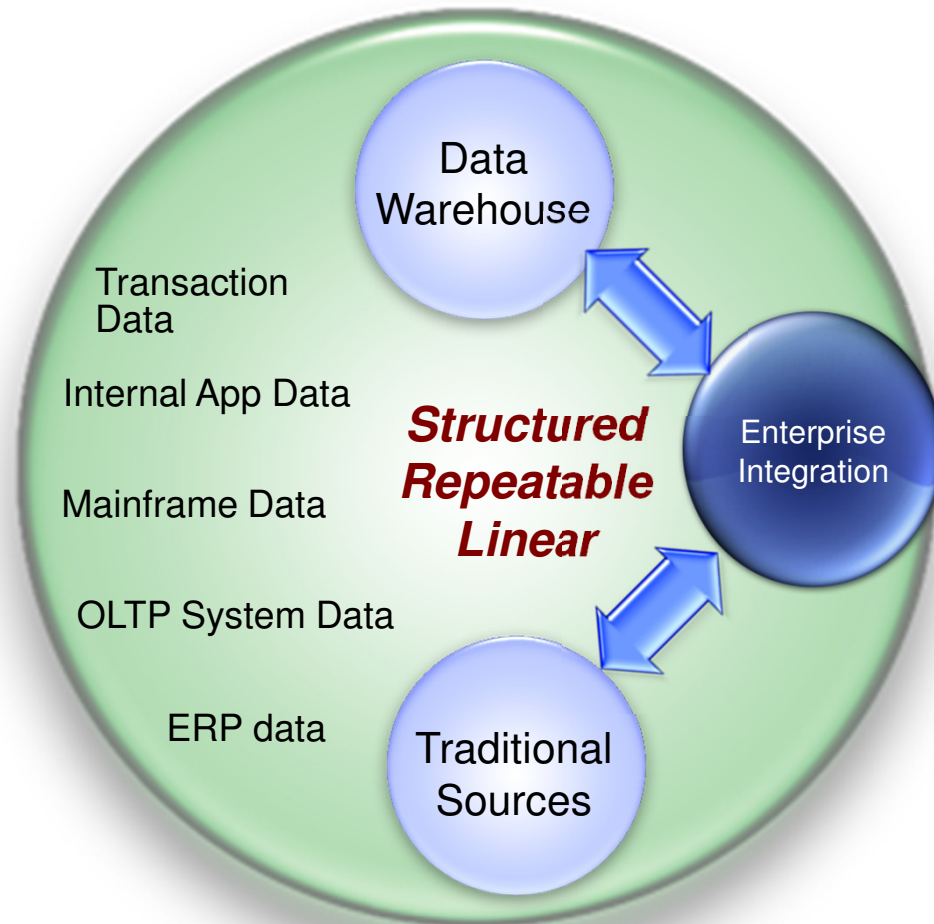
Explore new ways to apply new technology

Reinvent entire industries

Phase 1 for Big Data: Incremental improvement
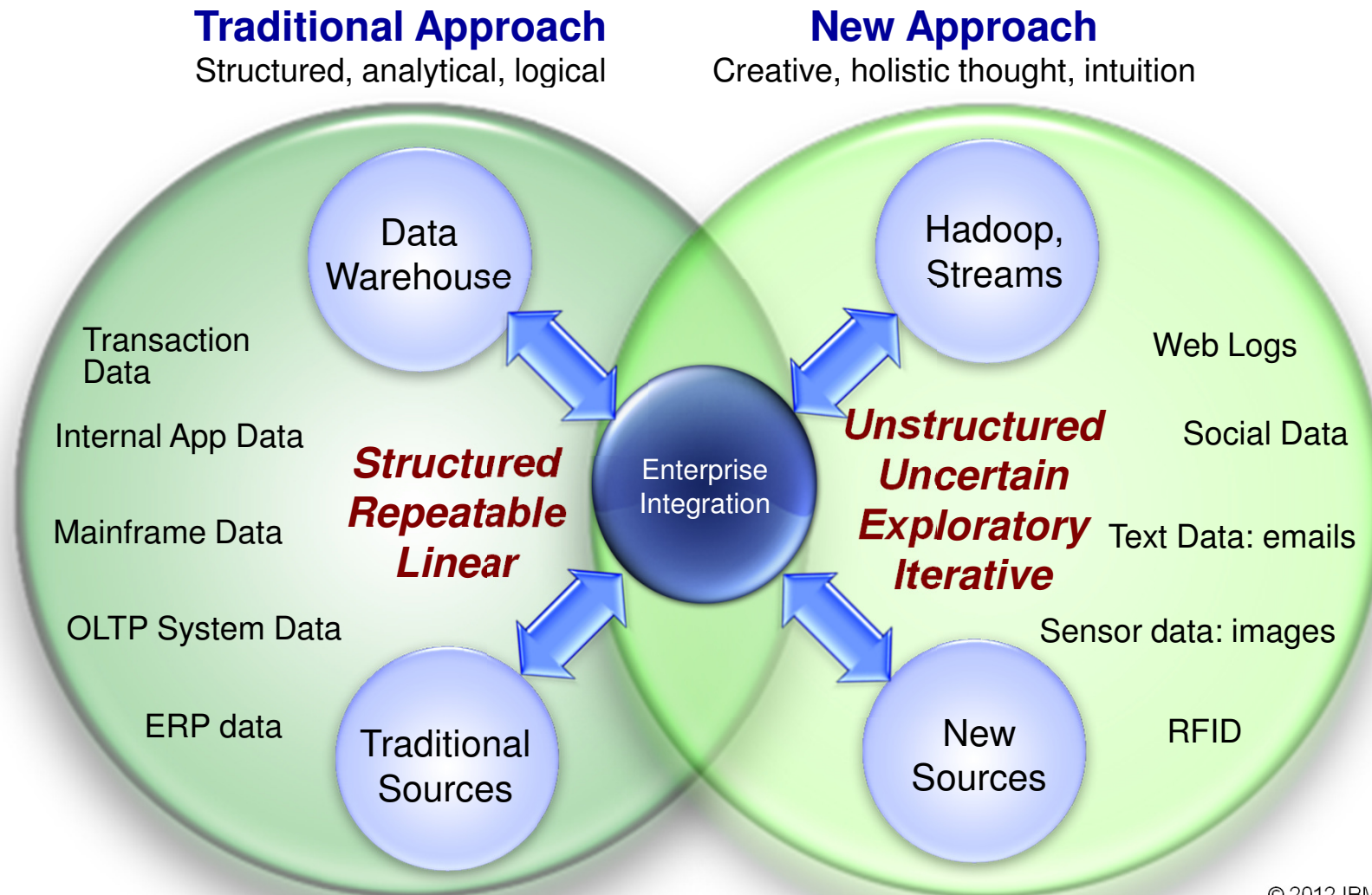Deep analysis for better decisions

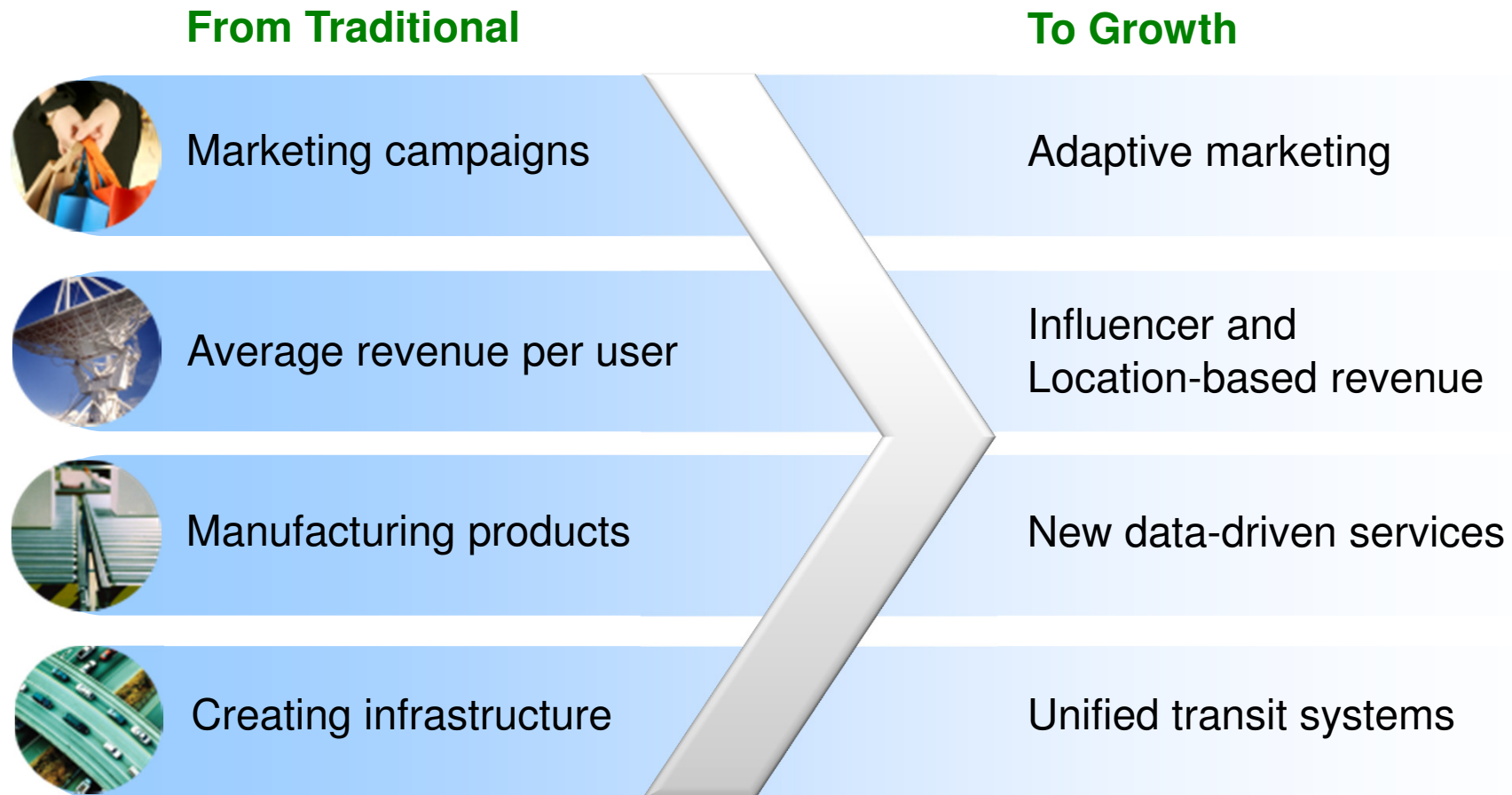**Traditional Approach**
Structured, analytical, logical

Data Warehouse

Transaction Data

Internal App Data

Structured Repeatable Linear

Enterprise Integration

Mainframe Data

OLTP System Data

ERP data

Traditional Sources

Phase 2 for Big Data: Creative exploration
Explore ideas, uncover patterns

Traditional Approach
Structured, analytical, logical

New Approach
Creative, holistic thought, intuition

Data Warehouse

Hadoop, Streams

Transaction Data

Web Logs

Internal App Data

Structured Repeatable Linear

Enterprise Integration

Unstructured Uncertain Exploratory Iterative

Social Data

Mainframe Data

Text Data: emails

OLTP System Data

Sensor data: images

ERP data

Traditional Sources

New Sources

RFID

Phase 3 for Big Data: Business Model Transformation
New sources of value and revenue

From Traditional	To Growth
Marketing campaigns	Adaptive marketing
Average revenue per user	Influencer and Location-based revenue
Manufacturing products	New data-driven services
Creating infrastructure	Unified transit systems

Improving our lives …

Individuals

- **Usage of public transport**

- Healthcare monitoring

- Home energy management

Dublin City Council
Comhairle Cathrach Bhaile Átha Cliath

Optimize public transport operations and improve customer experience

- Implemented Intelligent Transportation System designed to monitor traffic conditions in real-time

  - Analyzes 50 bus location updates per second

  - Provides real-time visualization and visibility into the arrival times of 1,000 buses

- Enabled the optimization of its 150 bus routes and 5,000 stop locations

Optimizing our businesses …

Companies

- **Churn prevention in Telco**

- Advertising and IP management

- Social sentiment analysis

Asian Telco

Reduce billing costs and improve customer satisfaction

- Ensure real-time mediation and analysis of 6 billion Call Detail Records per day

- Uses stream computing for real-time data integration and analytics

  - Data processing time reduced from 12 hours to 1 second

  - Hardware cost reduced to 1/8th

- Proactively address issues (e.g. dropped calls) impacting customer satisfaction

And improving our world

Society

- **Alternate sources of energy**

- Epidemic early warning

- Water management

Vestas

Optimizes wind turbine placement and operating life expectancy

- Analyze 2.8 petabytes of climate data to predict weather patterns at potential sites.

- More data means more accurate and richer models and results

  - Granularity 27km x 27km grids: driving to 9x9, 3x3 to 10m x 10m simulations

- Reduced response time for wind forecasting from weeks to hours

- Shortened time to develop a wind turbine site by nearly a month

Get started

Information is exploding whether you like it or not

$
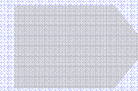
Establish the right big data foundation

Organizations that figure this out will outperform

AQ
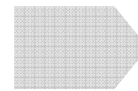
Assess your Analytics Quotient

And you have to get ready

Strategy

Define & Govern — Information Agenda — Road Maps

Information Infrastructure

Create an Information Agenda

How will you change the world with big data?

7billion

People in the world[1] with unlimited potential and ideas

48%

Expected growth in the digital universe in one year[2]

Limited

Resources and time on the planet

Let's build a Smarter Planet.

11/15/11