



GROWING BUSINESS THROUGH BIG DATA ANALYTICS

John Morton
Vilnius University
Vilnius March 2016

Guest speaker: Mr John Morton
Talk: Growing business through Big Data Analytics

Time : 2.0 hrs followed by 30 mins for open questions

Having great technology and being analytic are key skills demanded from the market place. This discussion is focussed on how you help business and organisations understand the value of data, effectively use data or disrupt established industries. This presentation covers new business models and uses for Big Data, Open Data and Your Data within organisations.

John Morton has 30 years experience in delivering information exploitation solutions in a range of industries (the last 5 years specifically in Financial Services) ; runs a consultancy company advising on disruptive technologies like Big Data; and mentors and advises on a number of start-ups, five of which are exploiting open and Big Data. He has held Chief Technology Officer positions within Intel and SAS Institute (the business analytics company).

1. Data : evolving need or theory ?
2. What the world needs from data?
3. Creating data equity and data assets.
4. Making Data Accessible
5. Key Business needs and models
6. Big data Framework



Infotainment



Health care

EVOLVING....

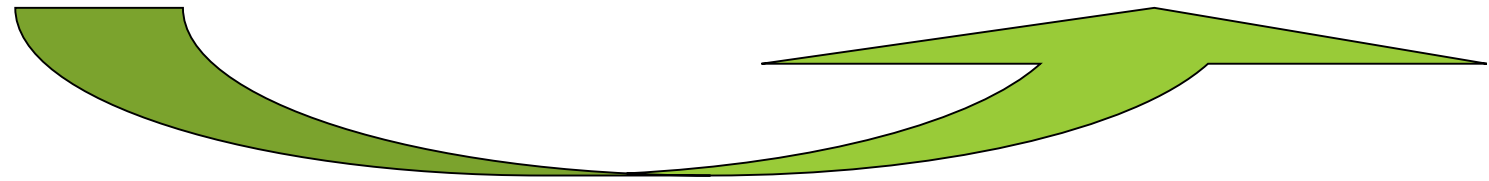
**19th Century
Elementary tasks
based on Human
Capability &
Flexibility**



**20th Century
Functional System
Integration makes life
easier**



**21st Century Integration of
comprehensive working
and Living Environment**



....OR THEORY?

Extreme Information Concepts Are the Information Management Focus Through 2015

Velocity
Variety
Volume



Extreme information is the concept current infrastructure traditionally long 12 primary dimensions to meet the challenges of the 21st century Information Age.

Gartner 2000



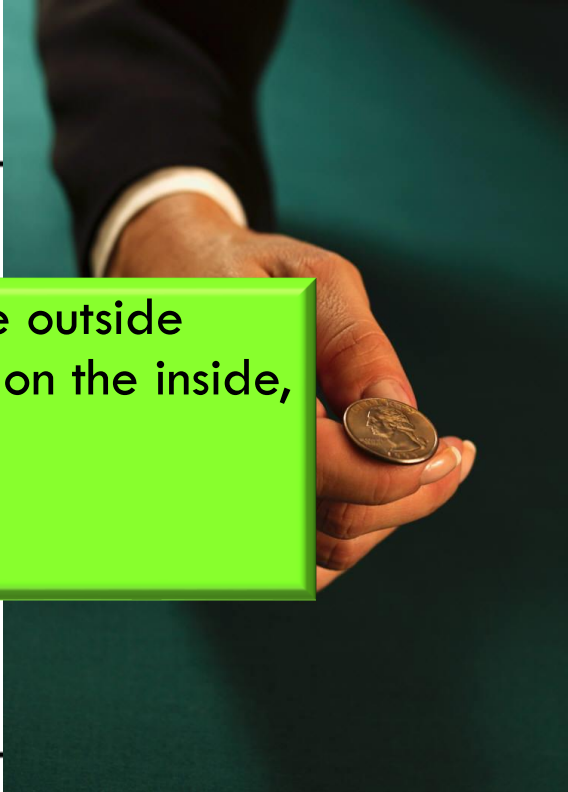
Gartner

BIG DATA HYPE OR, SOMETHING REAL?



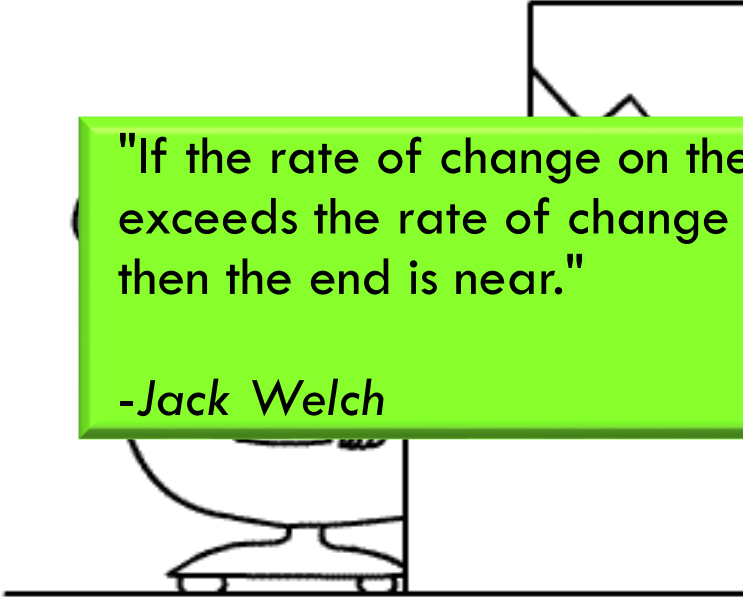
..... and more.....

TRIED AND TRUSTED



"If the rate of change on the outside exceeds the rate of change on the inside, then the end is near."

-Jack Welch



"It would appear, Hopkins, that your gut feel was only indigestion"

WHY ALL THE INTEREST?

- US healthcare reduction by \$300 Bn a year 2/3rds from a 8% reduction in national healthcare
- ... retailers can increase operating margin by 60% by fully utilising data
- ... €100 Bn reduction in Government administration across Europe
- ... predict the buying behavior and decision criteria of your prospects **weeks before your competition**
- ... gain first-mover advantage by introducing new products and services to micro market segments that **haven't been identified by anyone**
- ... evaluate the impact of your marketing campaigns **hourly** and make **adjustments in real-time**
- ... **Sustain a 4 to 6 %** in efficiency and effectiveness over your competitors

BIG DATA VALUE HYPE?



£216 Billion in 5 years,

58,000 jobs *

- **Creativity: £42 Billion**
- **Innovation: £150 Billion**
- **Productivity: £124 Billion**

***UK CEBR - Center for Economics and Business Research**

UK retail sector predicted to cut 900,000 jobs

British Retail Consortium says the sector will be much smaller in 2025, but remaining jobs will be 'more productive and higher earning'

Nadia Khomami @nadiakhomami

Monday 29 February 2016 10:12 GMT



Accountancy among sectors with highest risk of automation

by Calum Fuller 25 Jan 2016 0 Comments

Job of the week: Head of Finance, Retailbank, Competitive salary

Accountancy among sectors with highest risk of automation

Almost 40 per cent of Australian jobs could be replaced by technology by 2025, report finds

NEWS ABC

Just In Australia World Business Sport Analysis & Opinion Fact Check Programs More Topics

TOP STORIES

- Suicide attack in central Istanbul kills four
- Referendum passes way for shake-up of Queensland politics
- Paris attacks suspect to fight

Big Data Brings Big Changes to Recruiting

SHARE

SHARE

TWEET

PIN

COMMENT

EMAIL

BIG DATA BRINGS BIG CHANGES TO RECRUITING




Image: Waporn/Flickr

LATEST NEWS

- TV Netflix Hid a Luke Cage teaser in the *Daredevil* credits 17 HOURS
- TV Silicon Valley Is Back! Now With More Unicorns! 2 DAYS


More News

Will a robot take your job?

911 September 2015 Technology

Type your job title into the search box below to find out the likelihood that it could be automated within the next two decades.

About 35% of current jobs in the UK are at high risk of computerisation over the following 20 years, according to a study by researchers at Oxford University and Deloitte.

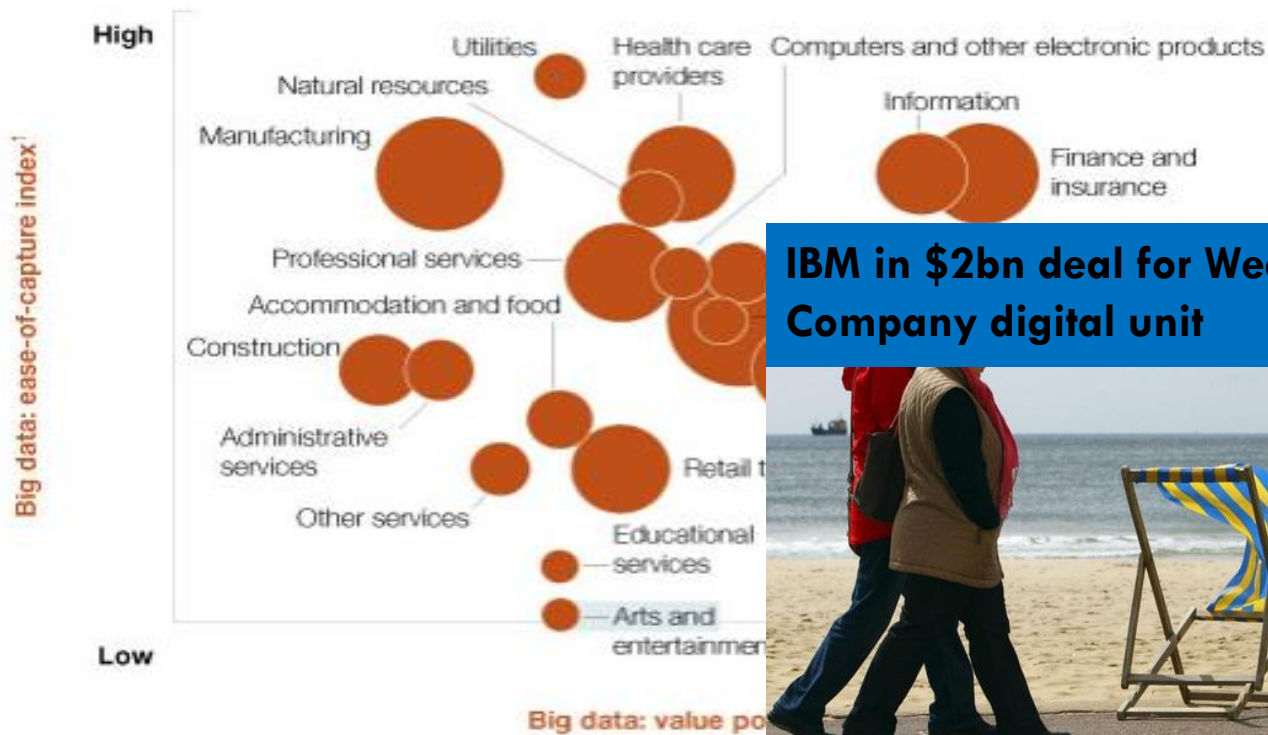


I am a...



Example: US economy

Size of bubble indicates relative contribution to GDP

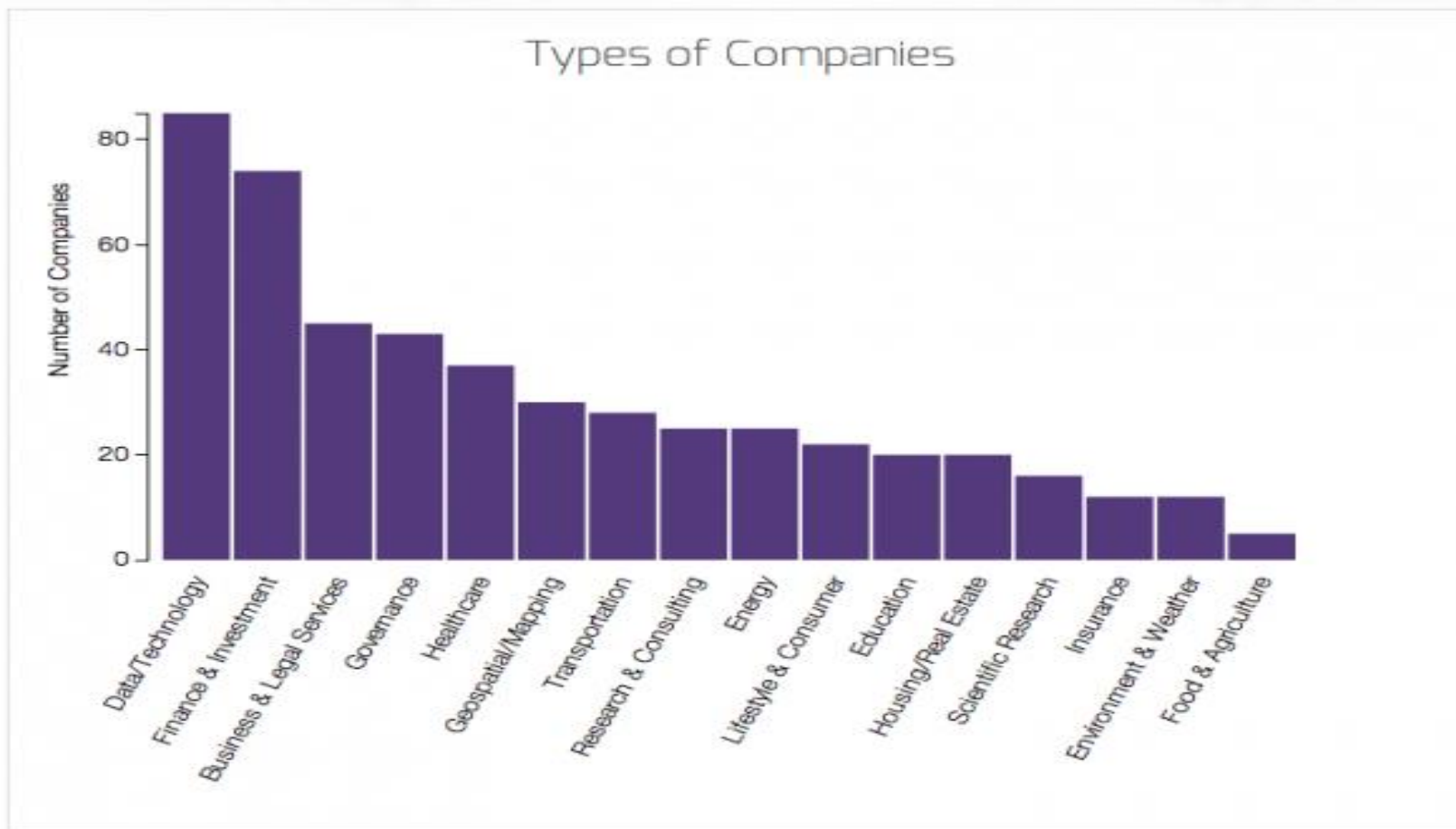


IBM in \$2bn deal for Weather Company digital unit



Relative contribution to GDP

Source : US Bureau of Labor Statistics;
McKinsey Global Institute Analysis

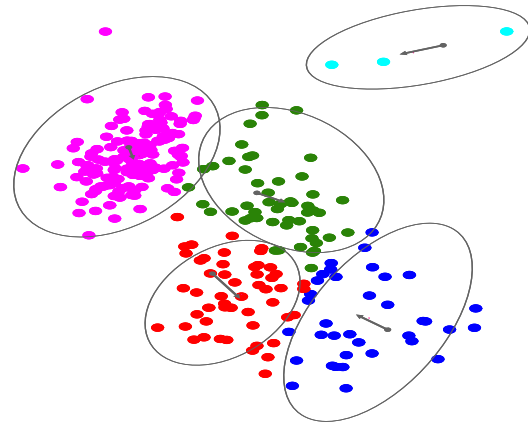
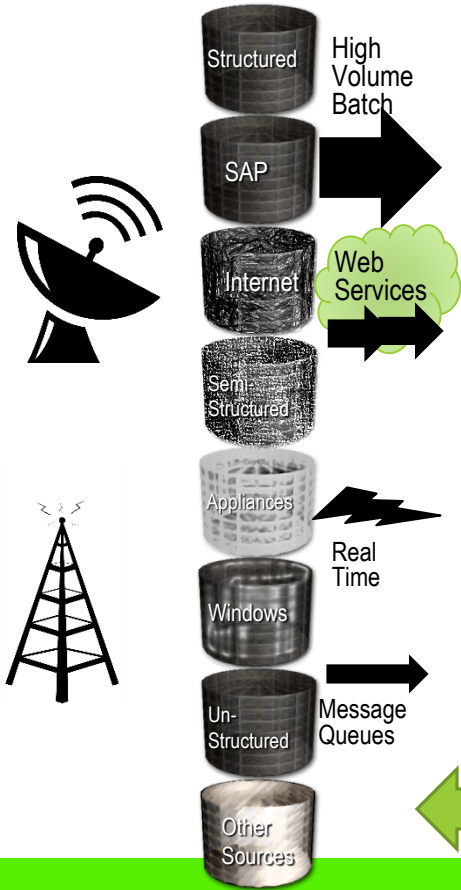


ABOVE: Types of industry sectors where companies are using open data in their businesses, sourced from [OpenData 500](#)

Sense

Predict

Act



SO WHAT ABOUT TECHNOLOGY?

40x More
Data ?

Too Expensive

No Expertise

Technology shift

£30 Terabyte disks

£2000 fault tolerant, computers

Store everything file systems

In-Memory

In-Database processing

In-Memory Analytics

In-Chip Analytics

Visualisation of data

Massively-parallel processing (MPP) analytics

HPC versus HPT



SCALEABLE SYSTEMS

Logging & Audit Framework

Storage Architecture

Alerting & Monitoring

Authentication Framework

Key Transactions / Usage

Information Architecture

Process and Workflow
Architecture

Insight Architecture

Re-use

Change

Re-use and
change specifics

Deployment & Update Models

Authorisation Framework

Metadata Framework

Audit & Compliance

Deployment Architecture

Schedule Dependencies

Networking

Backup, Recovery and DR

Resilience & Availability

Workload Management

Configuration Management

Environments Definition

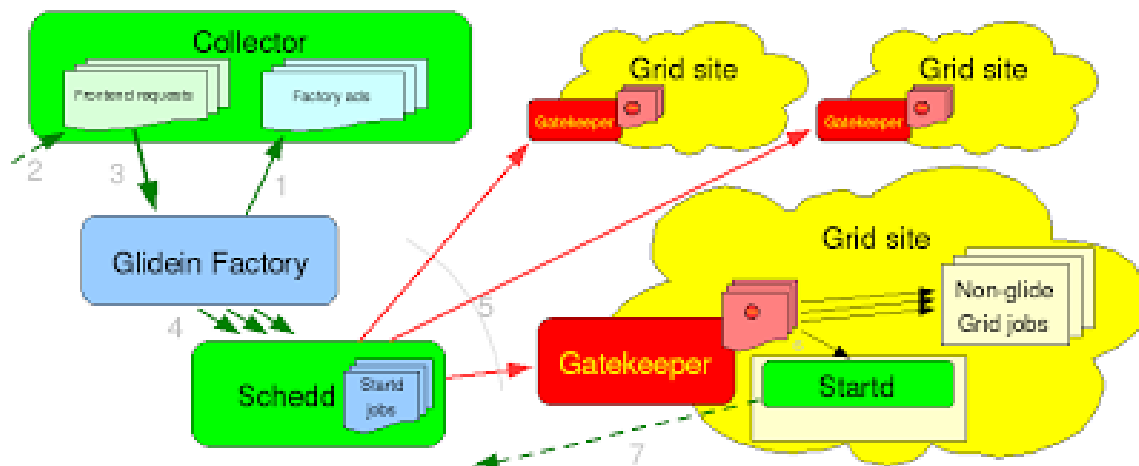
HTC vrs HPC

High Throughput Computing (HTC) and High Performance Computing (HPC) represent two computational models that are very different, both in implementation as well as the resources required to run these.

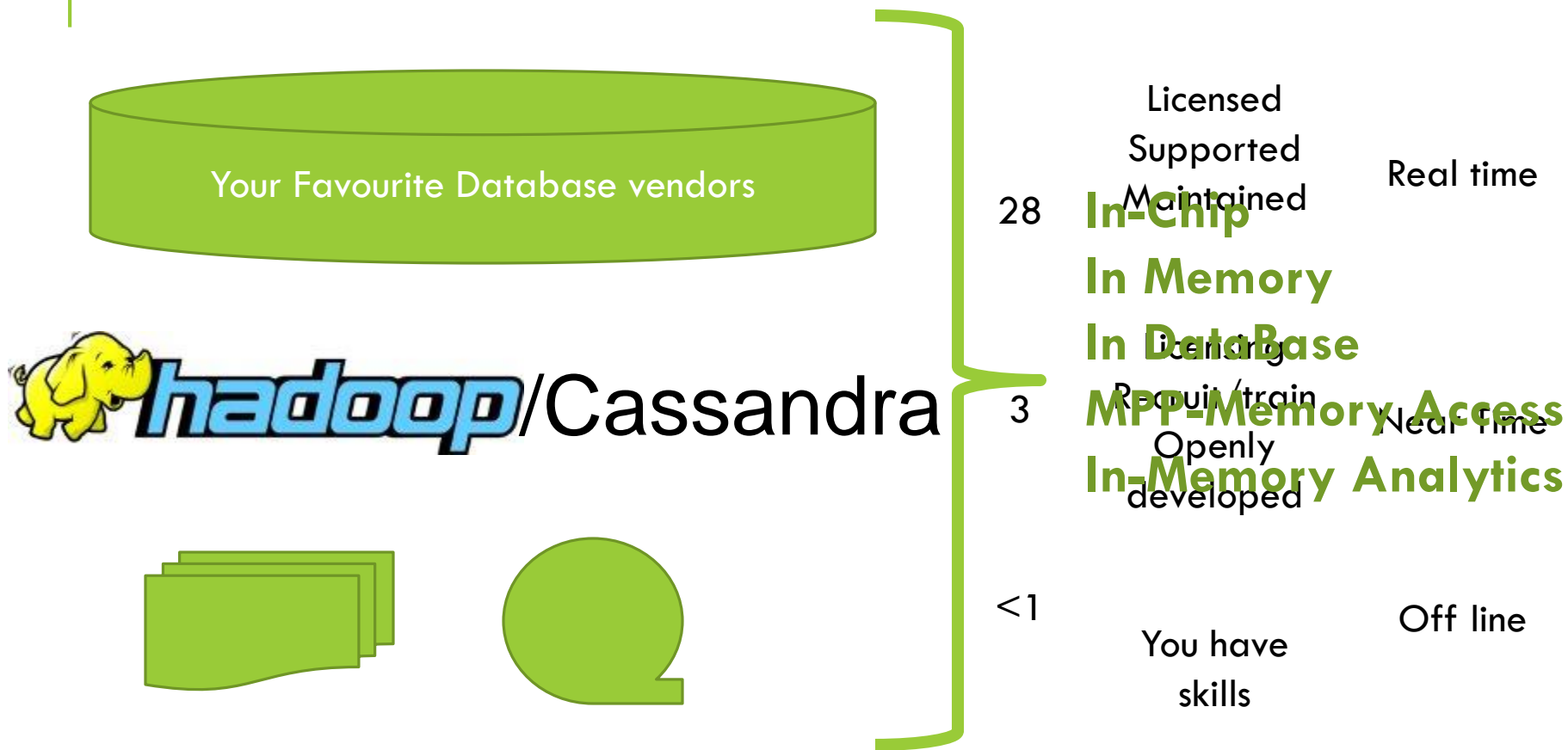
HPC codes ... are tightly coupled MPI, GPGPU, and hybrid programs. These codes require many low latency interconnected nodes." Because of this interconnect, HPC resources tend to be pricey.

HTC technology brings forth the hidden power of your CPUs that are never fully utilized, elevating the utilisation to close. HTC is, by design, a system based on unreliable components. Giving work to every node and the results eventually come back. If some of the nodes fail, the jobs can be restarted on a different system.

OSG Factory Glidein



DATA STORAGE/DATA ACCESS



WHERE TO START?



Raspberry Pi

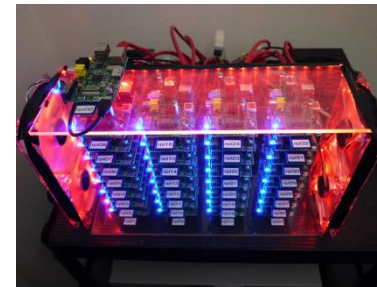
Scratch
Python
HTML5
JavaScript
jQuery
Java
C
C++
Perl
Erlang

MYSQL
PostGres
SQLite
PythonDB

Hadoop

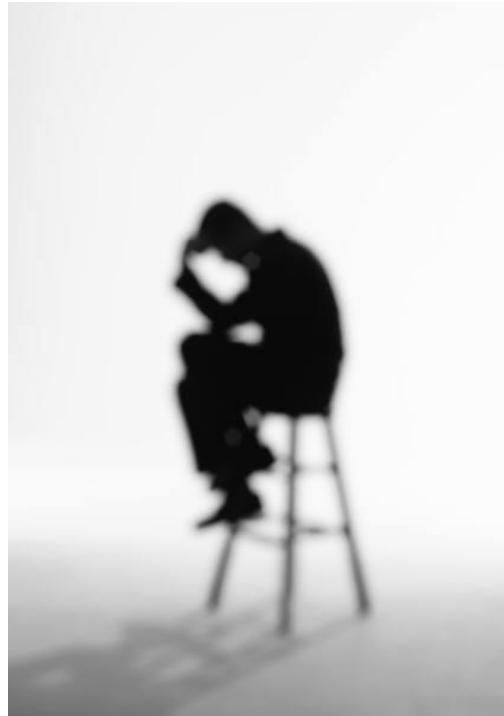


Intel Nuc



BUSINESS DILEMMA

How can we increase productivity?



What more can I do to compete?

Staying in business

What else can we do?

BIG DATA DISRUPTION



DATA LAKE



IT

Business

DATA LAKE FRAMEWORK CAPABILITIES

INSIGHT SERVICES

INFORMATION GOVERNANCE

Interfaces
and
Integration

Information
Quality and
Information
metrics

MDM

Supporting
Services
Events, linkage
Workflow &
Business Rules

Algorithm
Management,
Calibration &
Monitoring

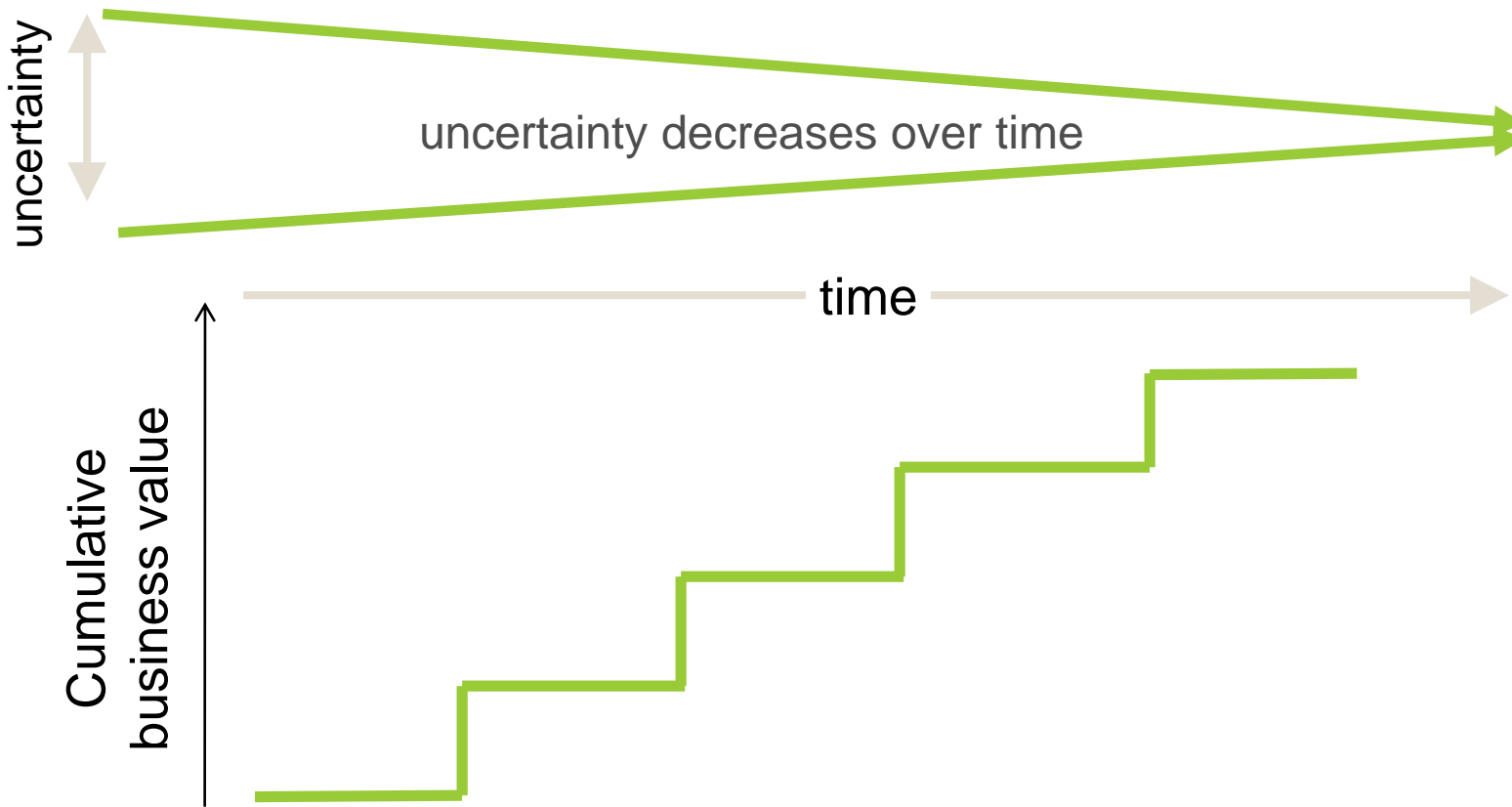
Information and
Algorithm
Assessment

INFRASTRUCTURE SERVICES

Security, Meta-data & Lineage, Versioning, Monitoring & Deployment

INFORMATION AND CONTENT ACCESS

VALUE OF DATA LAKES



STAYING IN BUSINESS

Transparency

Security

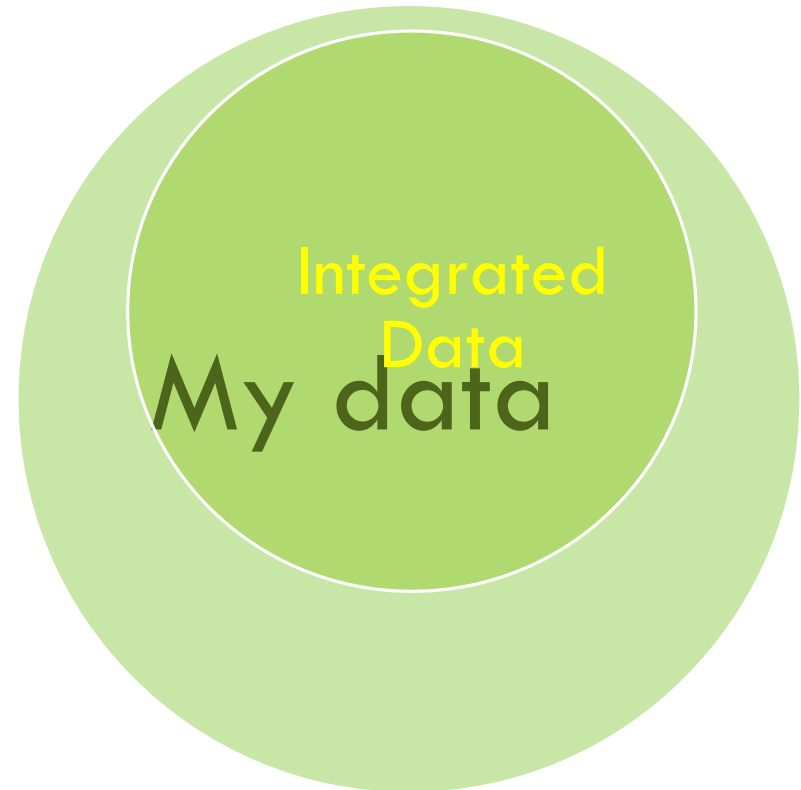
Business Health

Provenance

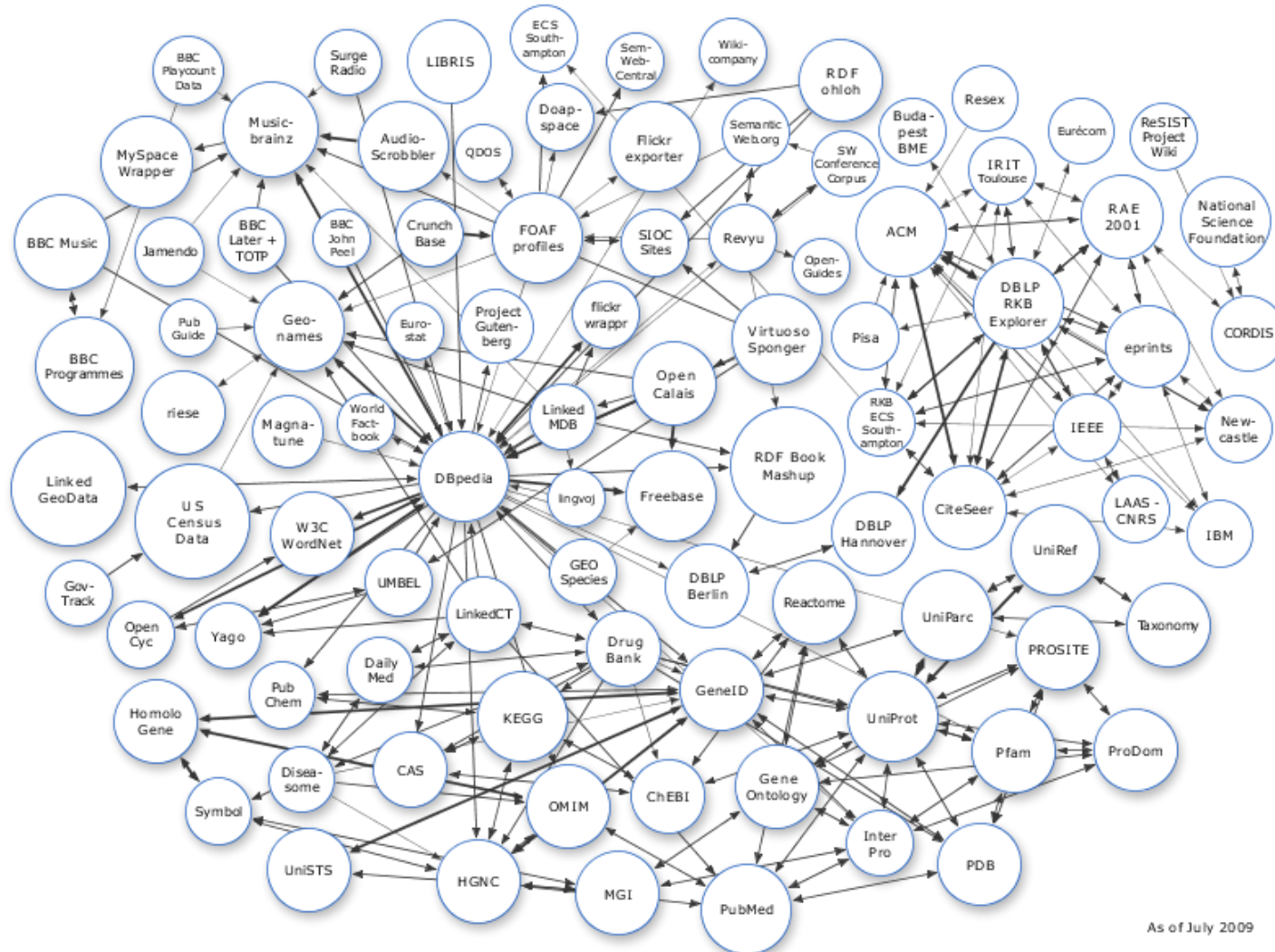
Compliance

Governance

Business Improvement



DATA, DATA, DATA, EVERYWHERE!



As of July 2009

Linked data – Shareable, understood, unified in format and access to data

<http://dbpedia.org>

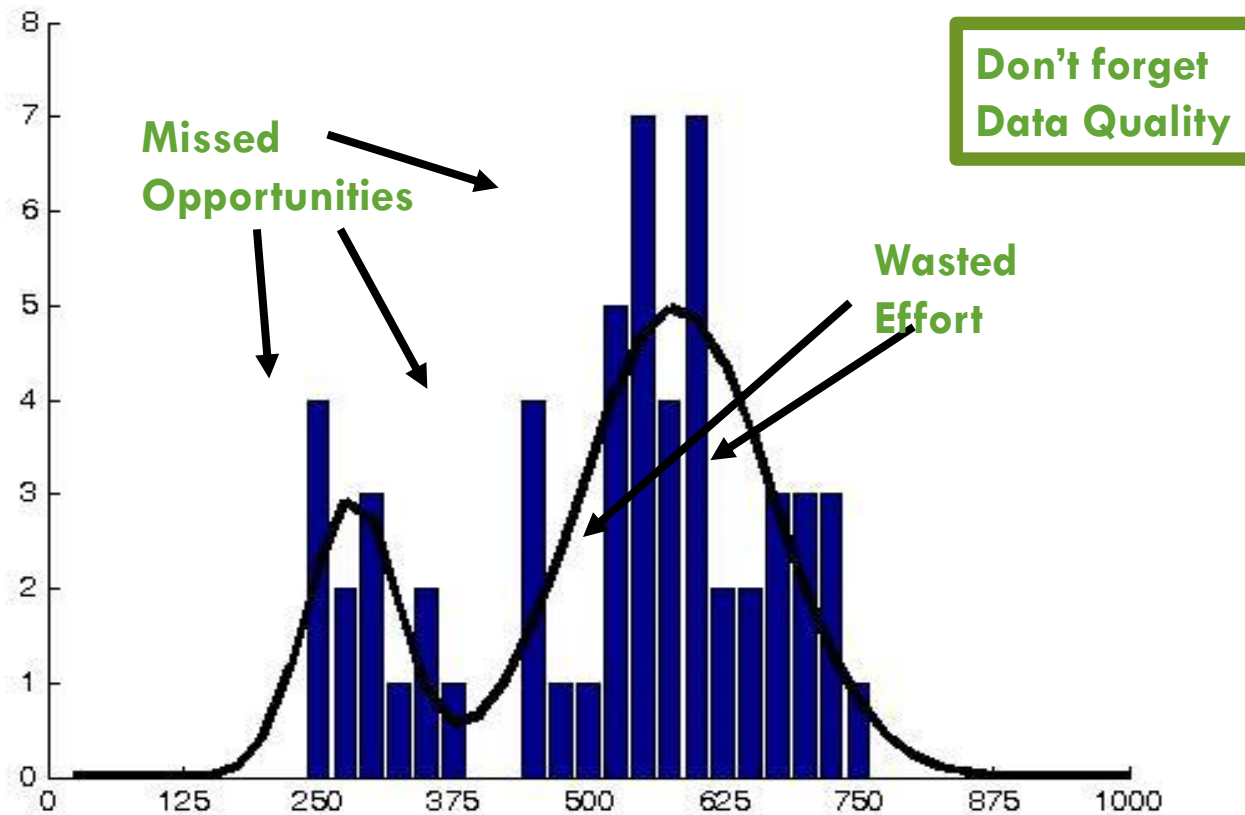


EXAMPLES OF DISRUPTION FROM “OPEN DATA”

1. Crop yield
2. Predicting profits of :
 1. Supermarkets
 2. Energy
3. Weather
4. Company information

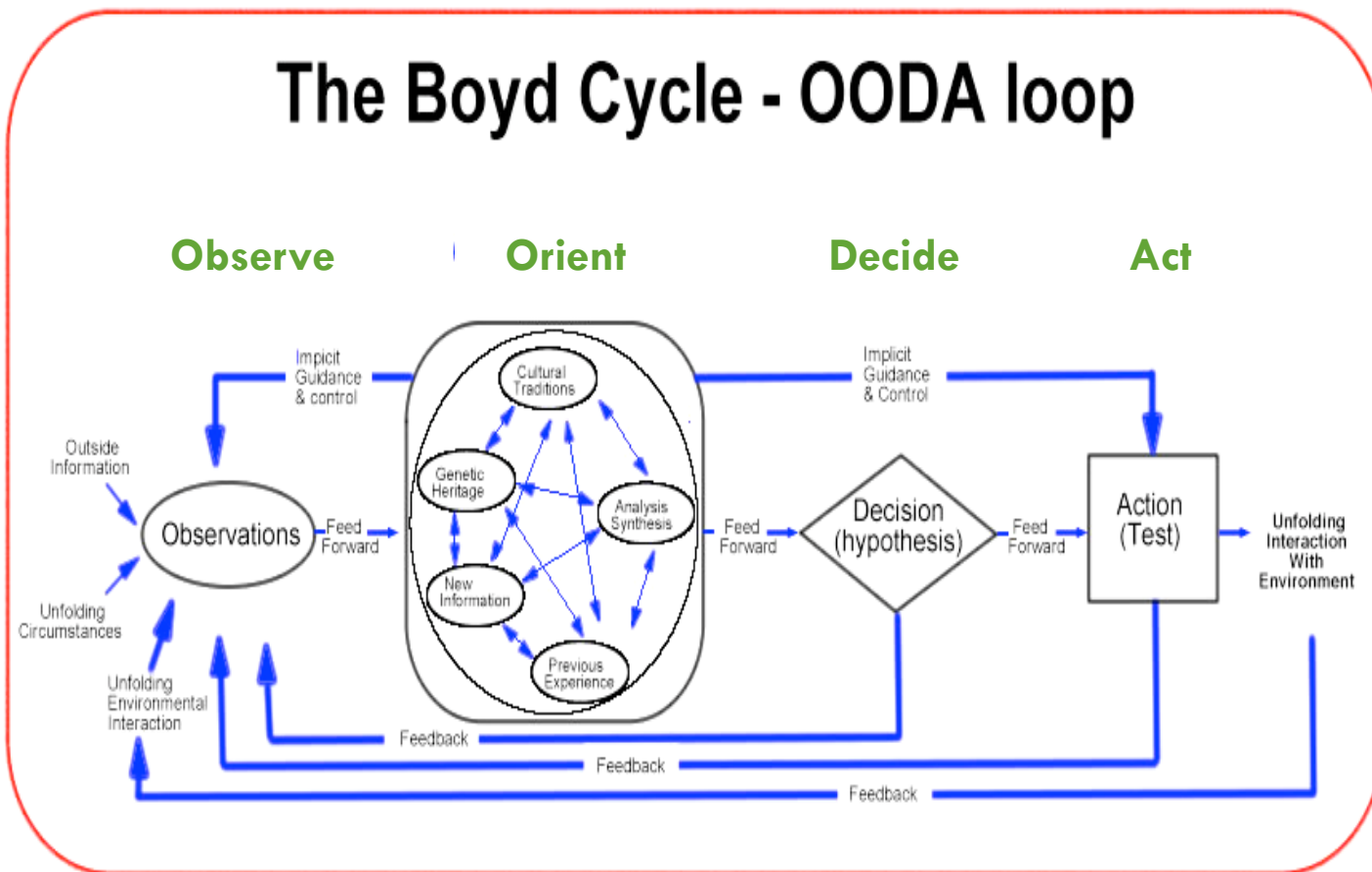
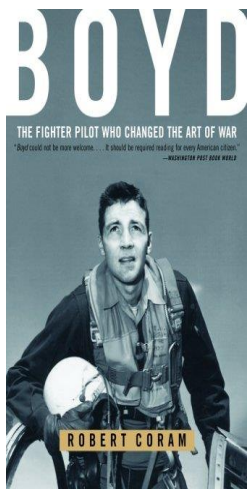
DOING MORE WITH WHAT YOU HAVE

productivity
complete

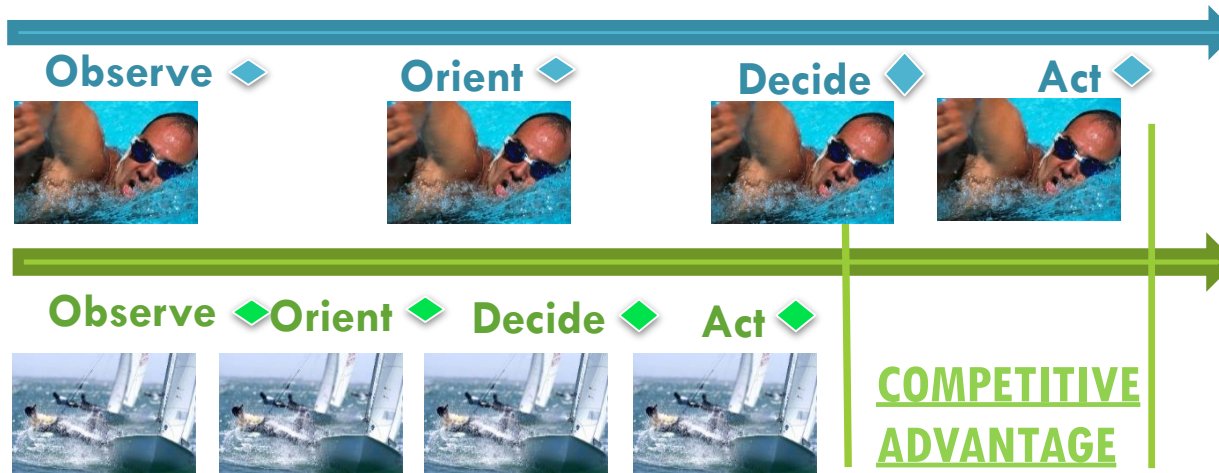


Lets talk about Decisions.....

The Boyd Cycle - OODA loop



Analytics Changes the Process

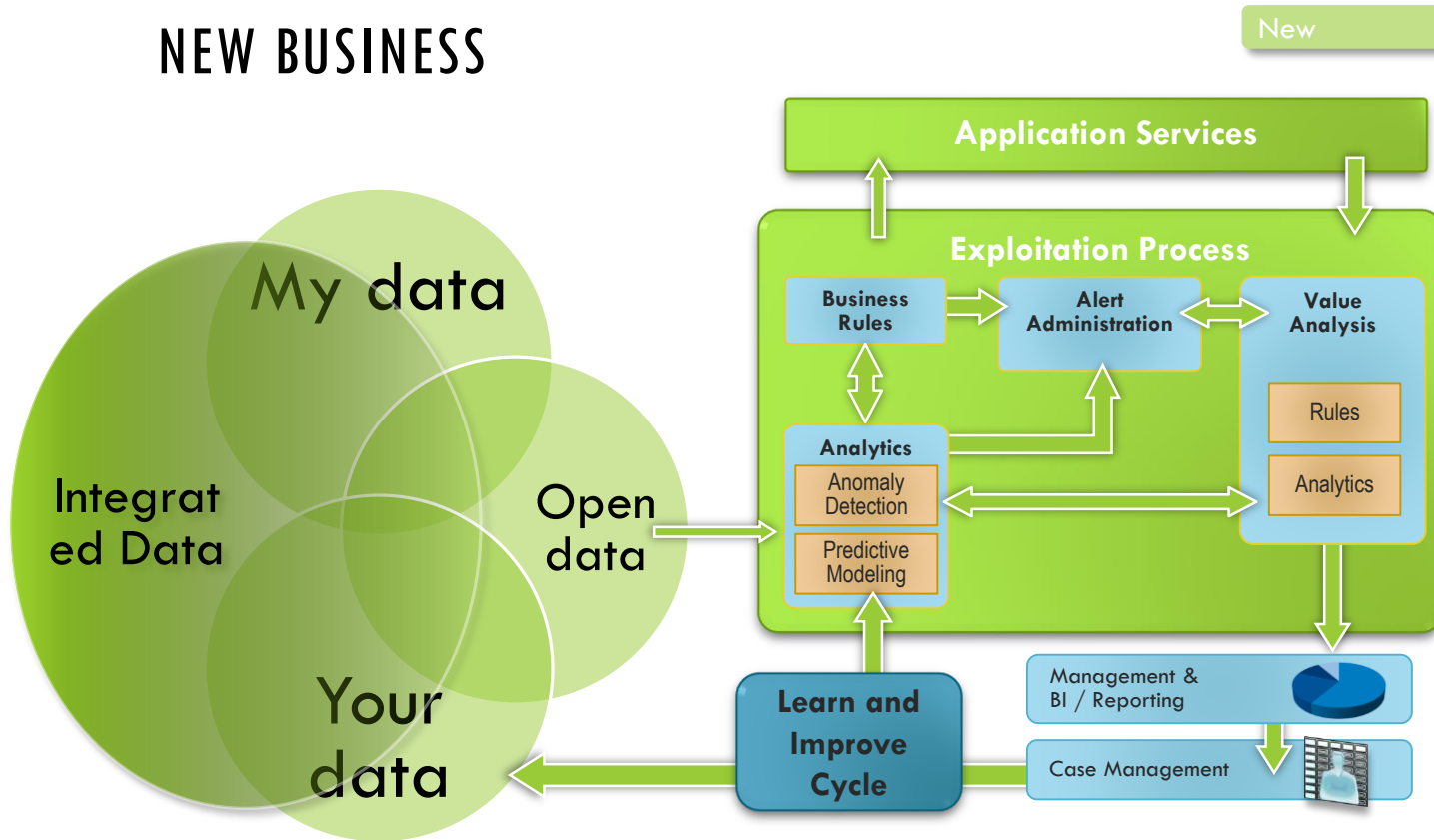


- Streamlined processes
- Decision driven steps
- Data and process aligned
- Moving to Exception Management

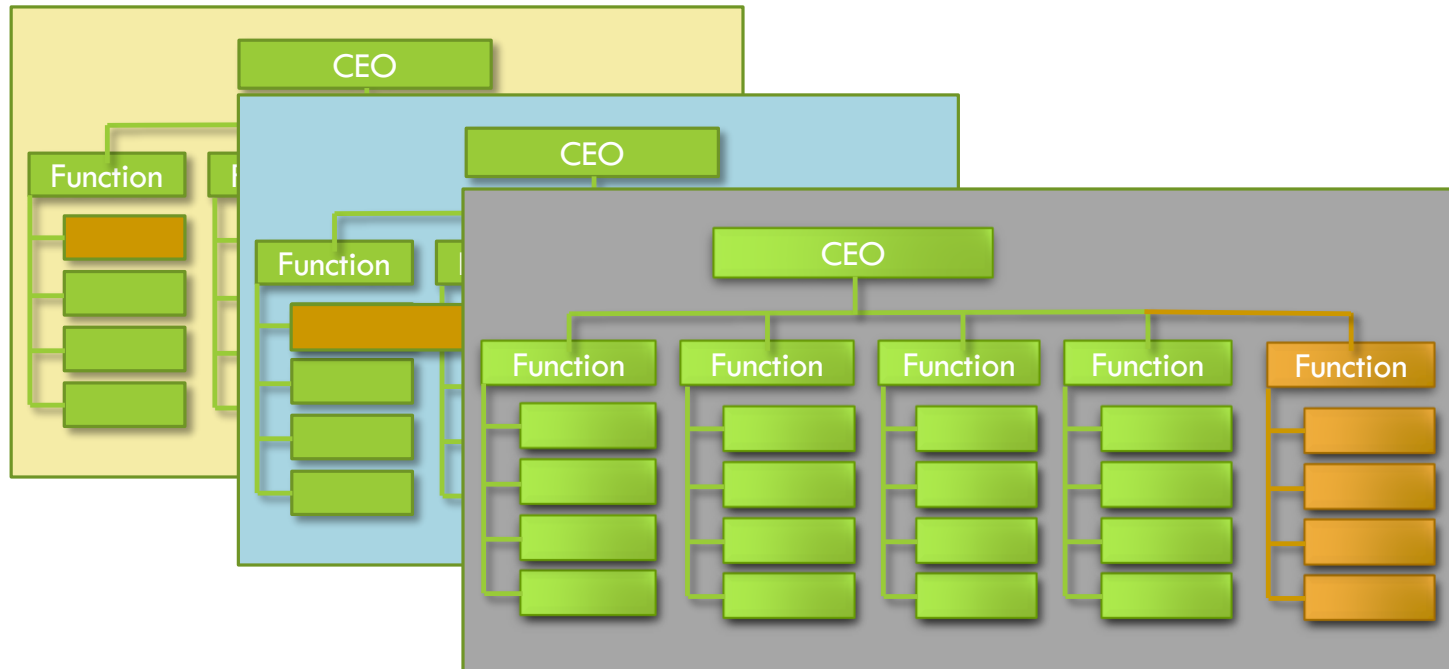
**COMPETITIVE
ADVANTAGE**

**BUSINESS
OPPORTUNITY**

NEW BUSINESS

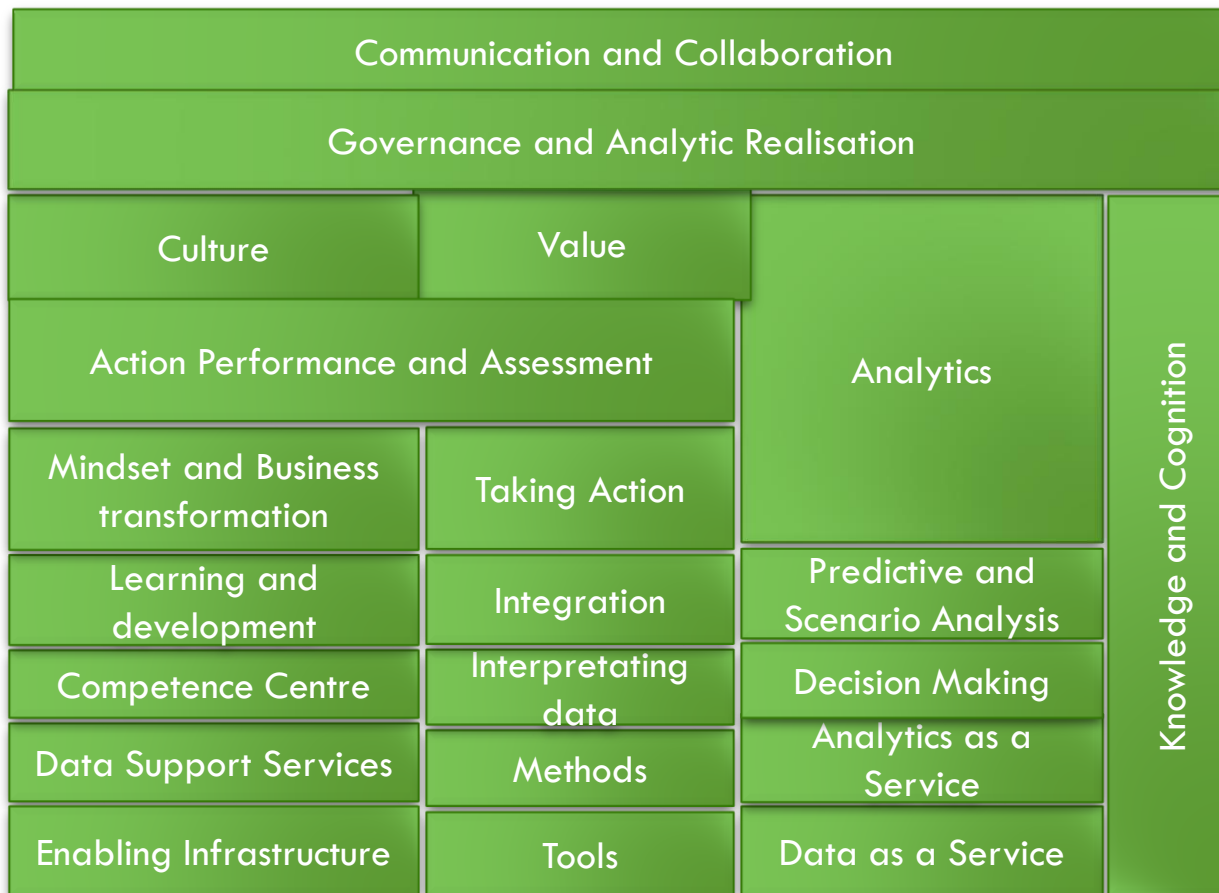


OPERATING MODEL

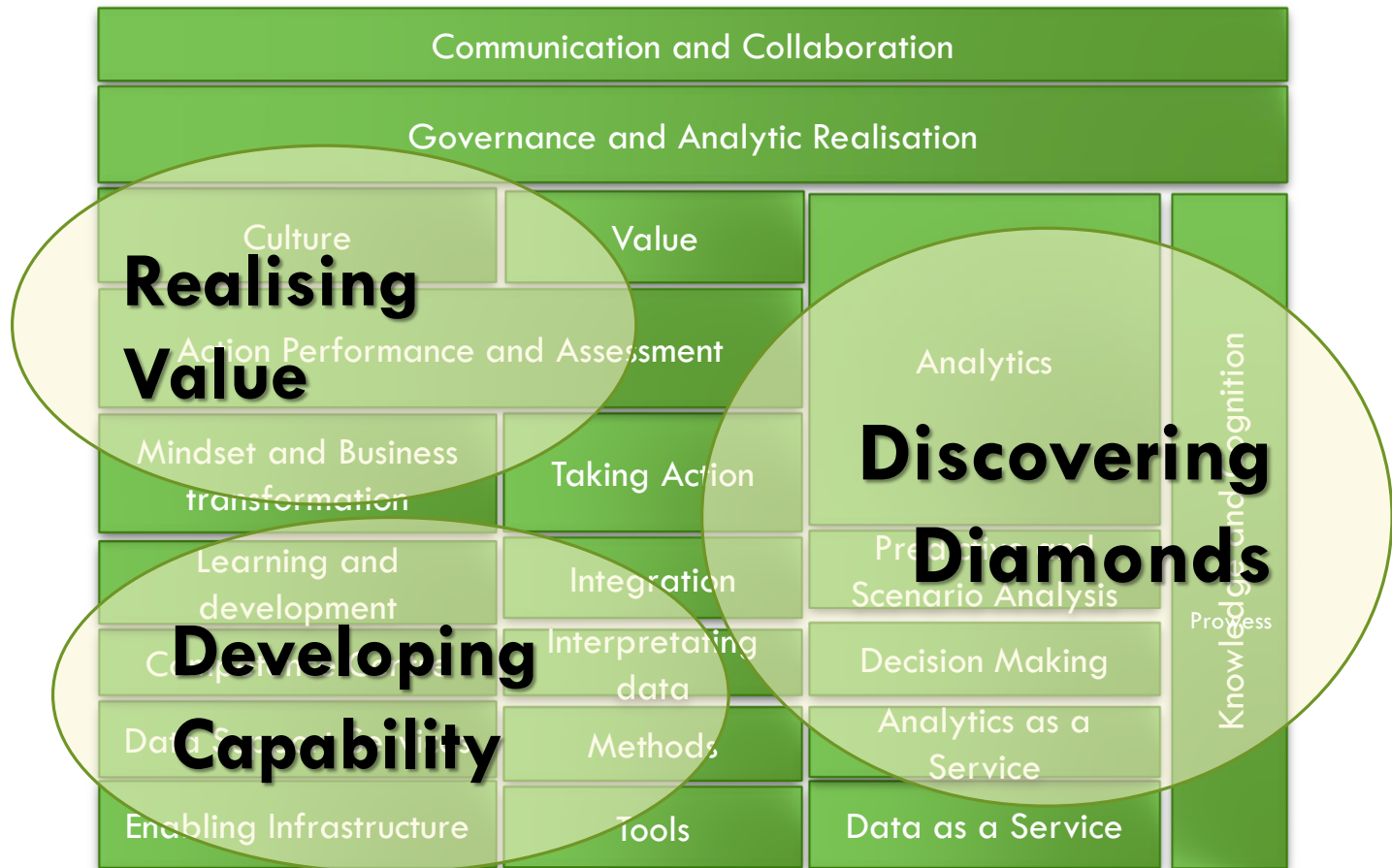


Leading analytics → CMO + CIO + CPO + COO → £↑

BIG DATA FRAMEWORK



BIG DATA FRAMEWORK



ANALYTICS SUPPORTING PRICING

Business as Usual

Prices are set regionally or by products

Promotional pricing offered on new term deposits

When promotional pricing lapses

- Some customers leave
- Other roll-over their deposits

Promotional and go-to prices vary significantly

- Across regions
- Over-time
- Relative to competition

Analytic pricing

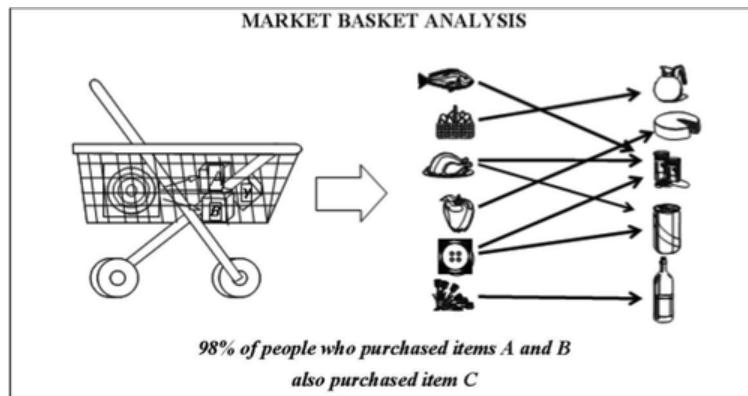
Statistically predict customers sensitivity by product by price to pricing strategy

Target the right price for the customer

Consciously manage the fund for customer retention

MARKET BASKET ANALYSIS

Classical



Advanced next product to Buy

Basket = Collection of Customer
Specific data that may include:

Socio-demographics

Product portfolio

Transactional Behaviour

Contact history

Debt and payments history

RECOMMENDATION ENGINES

Revenue	5-15% overall revenue increase
Engagement	12 – 18% of visitors engaged with product recommendations
Average Order Value	30-70% increase – visitors who engage with recommendations
Conversion Rate	2-4x increase – visitors who
Saving Staff Time	Elimination of manual Content Management effort
Items per Order	20-40% increase- visitors who engage with recommendations

Cross-channel campaign management

Plan

- Write briefs.
- Define objectives.
- Specify audiences.
- Track budgets.

Analyze

- Model behaviors.
- Build segments.
- Plan selections.
- Optimize contact strategies.

Design

- Design campaign flows.
- Integrate creative assets.
- Link promotions and offers.
- Apply business rules.

Execute

- Execute campaign tactics.
- Track responses.
- Detect inbound responses and state changes.
- Trigger next actions.

Report and reuse

Analyze campaign performance. Refine campaign templates.

Collaborate

Workflows, tasks, and approvals

Administer

Data, users, and templates

CROSS CHANNEL INTEGRATION — VALUE

Challenge :

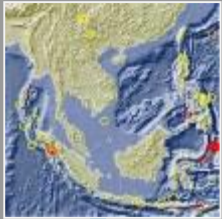
Which offer should be made to the customer through which channel at which time?

- However you have to take care of:
 - Budget- and/or Resource restrictions
 - Limit of customer contacts (Customer Contact Strategy)
 - Strategic Changes (You have to push Product A!)
 - Unsatisfying response- or sales figures or unbalanced channel-usage
 - Customer buying practice
 - Customers sensitivity to price

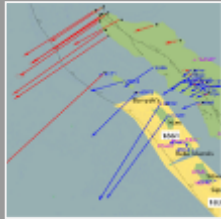
DLR: TSUNAMI EARLY WARNING & MITIGATION CENTER

Systems

Seismic Monitoring



GPS



Tide Gauges



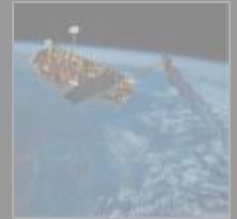
Ocean Bottom Units



Buoys



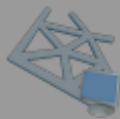
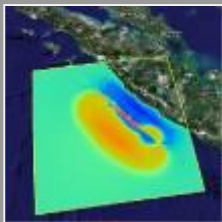
EO Data



Observations

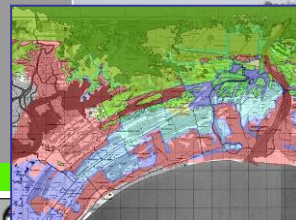


Simulation



BMG 5in1 / 6in1 System

Geospatial Data Repository



QUESTIONS



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