



CENTRE FOR
CONTINUING EDUCATION

Big Data Business Cases and Data Collection

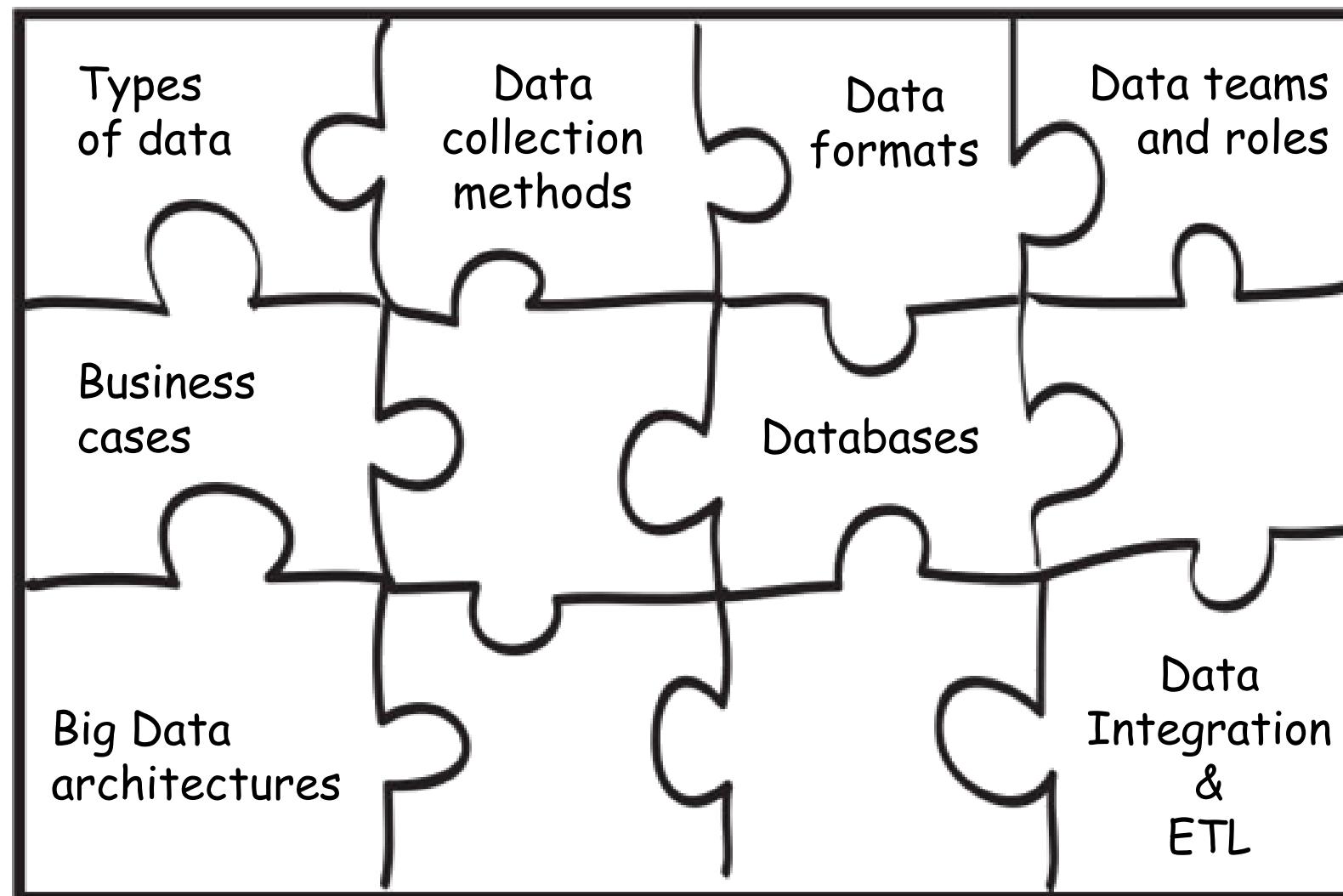
CEBD 1150

Session 06 – Business Models for Big Data Projects

Session: Fall 2019

Instructor: Adrian Gonzalez Sanchez

Previously... on CEBD1150



Schedule

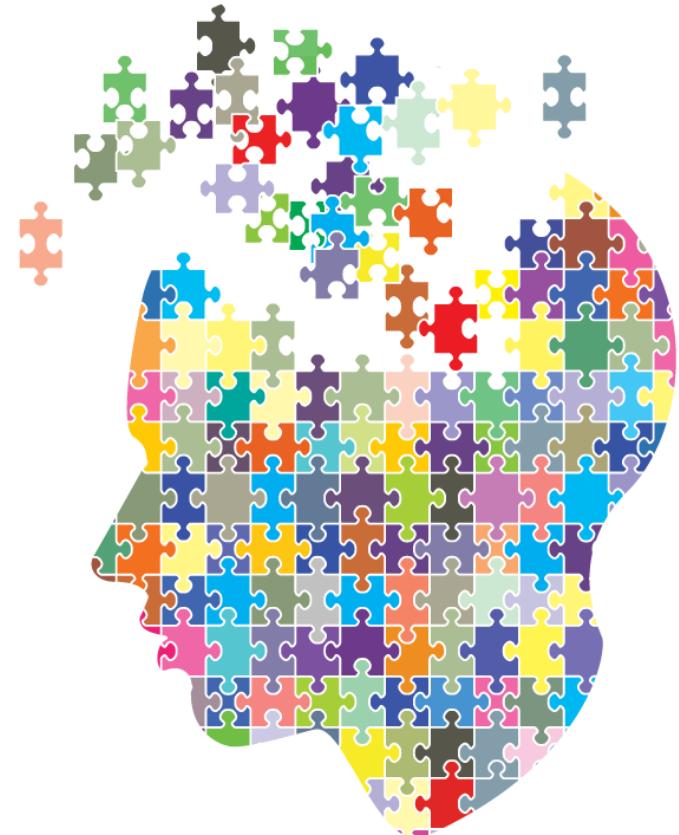
- Session 01 (Sep 22) – Intro to Big Data Business Cases
- Session 02 (Sep 29) – Understanding Data Sources
- Session 03 (Oct 06) – Working with Data Teams

-- THANKSGIVING WEEKEND --
- Session 04 (Oct 20) – ETL and Integration Tools
- Session 05 (Oct 27) – Alteryx Workshop
- **Session 06 (Nov 03) – Business Models for Big Data Projects**
- Session 07 (Nov 10) – Strategic Analysis
- Session 08 (Nov 17) – Legal and Ethical Aspects
- Session 09 (Nov 24) – Data Tools Overview
- Session 10 (Dec 01) – Pitching a Big Data project



Our learning goals today

- Review **Alteryx assignment** together
- Learn about the **Business Canvas Model** framework to analyze data-driven companies
- Discuss about **Return on Investment (ROI)** and value hypothesis for Big Data projects



BEFORE STARTING...

Data-driven: Telecom operators

Big Data – why now

For Bell, to remain a recognize high value services company, we need to better understand our customers needs and demands, see how our network influence those, how we interaction with them, what they say about us,

We need to be able to answer the impossible questions like ...

- *What happen with the customers in the week before they decided to “churn” and go with a competitor?*
 - *Did they call our Help Desk? How many time?*
 - *Did we visit them? What did we do? What was the problem?*
 - *Did our network failed them(maintenance or impromptu)?*
 - *Did a competitor changes its price for similar services?*
 - *What is social media is saying about it?*

Data scientist at Bell are working to answer those impossible questions... with Big Data



- BI Big Data: Customer Operations BI team with 2.5PB & 125 nodes of Cloudera Hadoop ingesting 30 customer related data sources.
 - ▶ FibreTV audience measurement
 - ▶ Predictive churn modelling
 - ▶ Customer type & proximity derived from Cell tower & retail store location
 - ▶ Etc.
- Governance process evolving to co-ordinate efficient platform use across organizations.
 - ▶ BI teams involved to share data sources, analytics and avoid duplication
- Moving towards derived analytics to support Business Process Management and Next-Best-Action programs

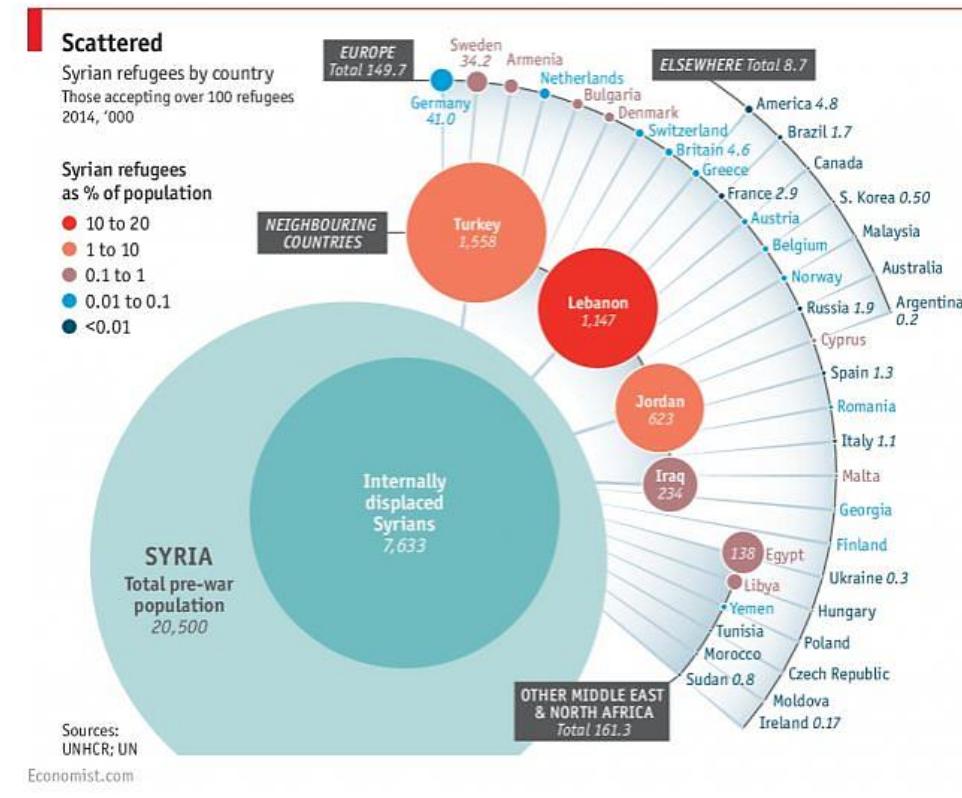
Alteryx talks



Alteryx talks

Where Syrians find their refuge

How the crisis compares to previous ones, and where Syrians are now



Other visualizations:

- <https://www.syria-visualized.com/>
- <https://data.unicef.org/resources/migration-refugee-data-visualizations/>

Analysis canvas templates

Download these resources >



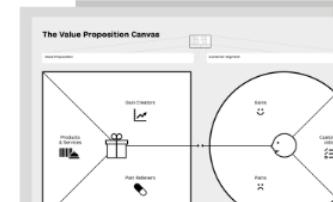
Business Model Canvas
The Business Model Canvas is a strategic management and entrepreneurial tool. It allows you to describe, design, challenge, invent, and pivot your business model.

[Learn more >](#)



Value Proposition Canvas
The Value Proposition Canvas helps you tackle the core challenges of every business — creating compelling products and services customers want to buy.

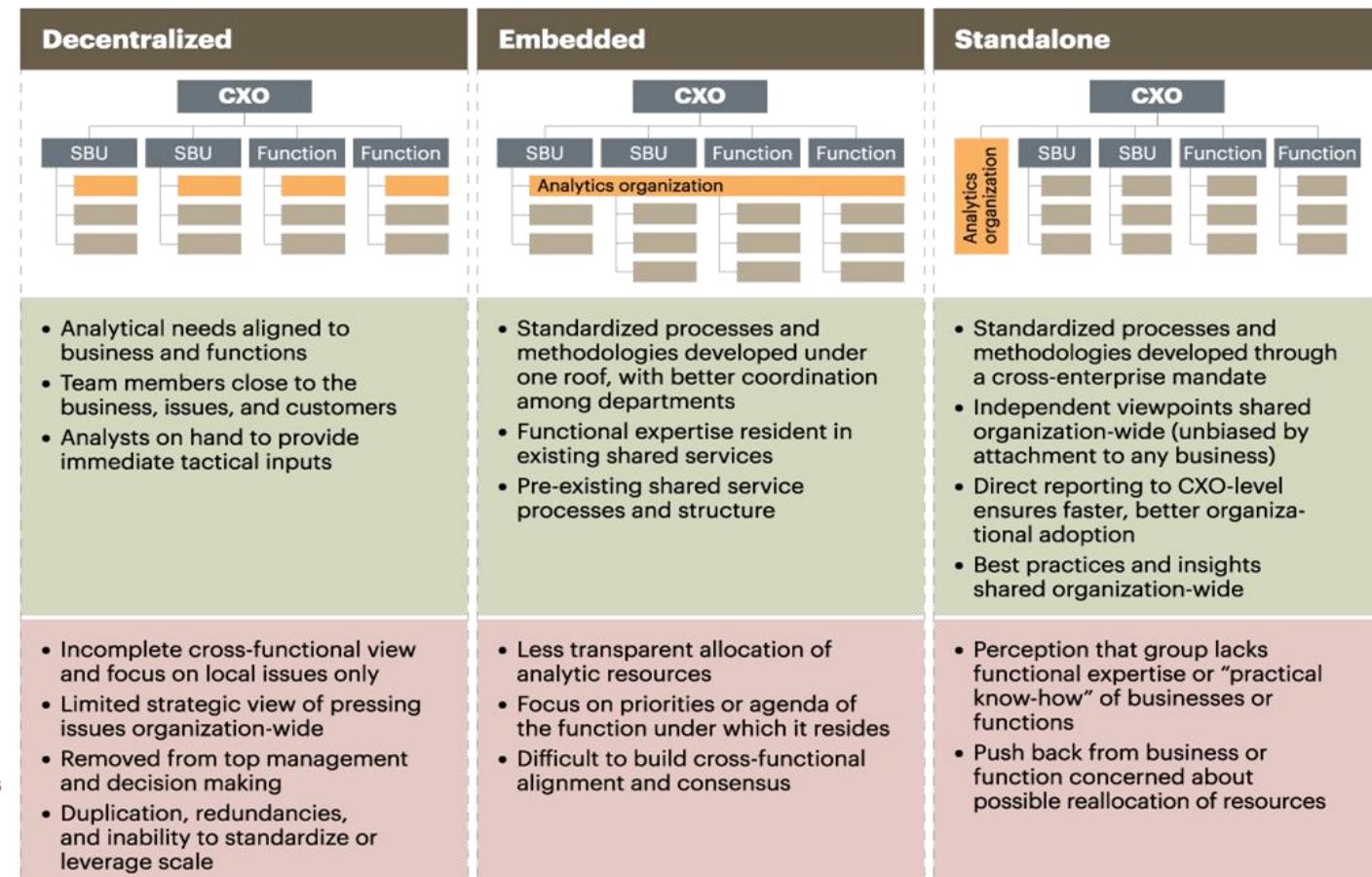
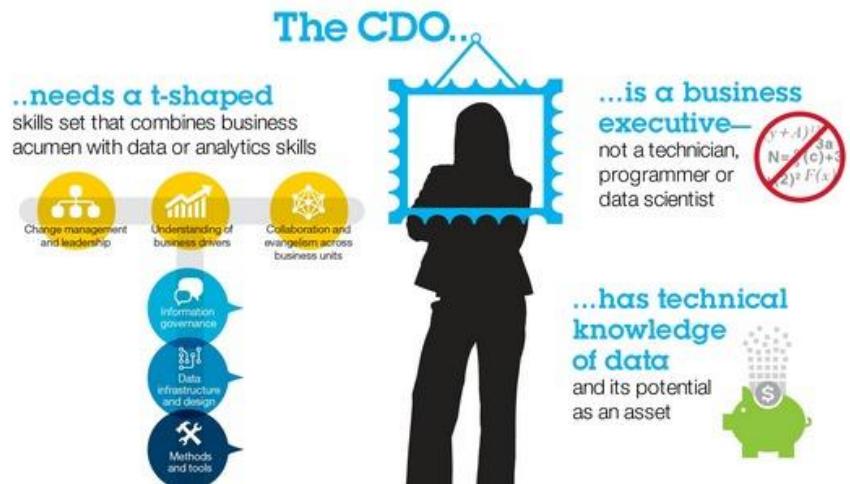
[Learn more >](#)



FREE TEMPLATES: <https://www.strategyzer.com/canvas>

Organizational approaches

The new hero of big data and analytics:
The Chief Data Officer



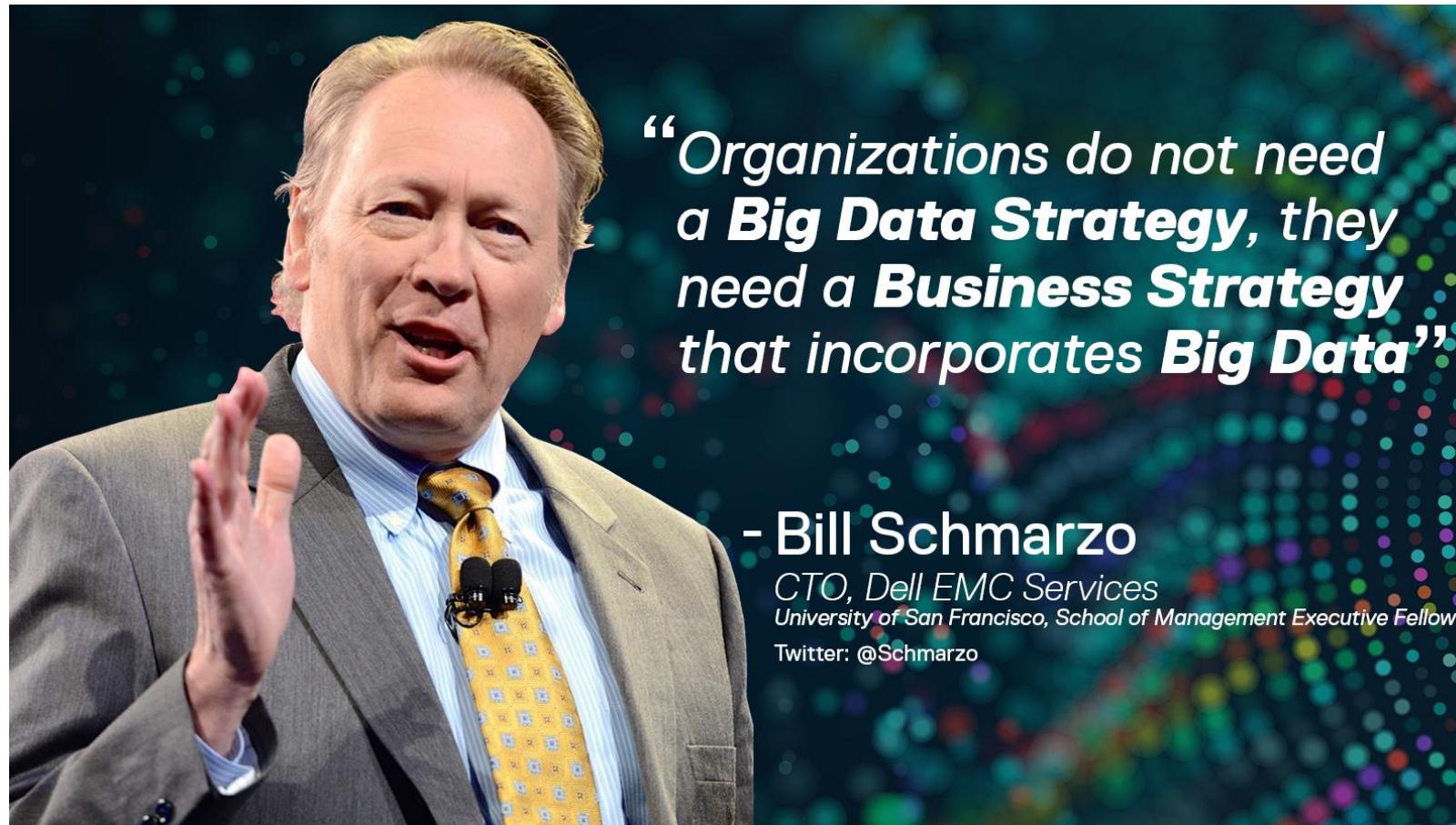
■ Organizational business or function

■ Analytic activities and capabilities

■ Business process

Source: A.T. Kearney analysis

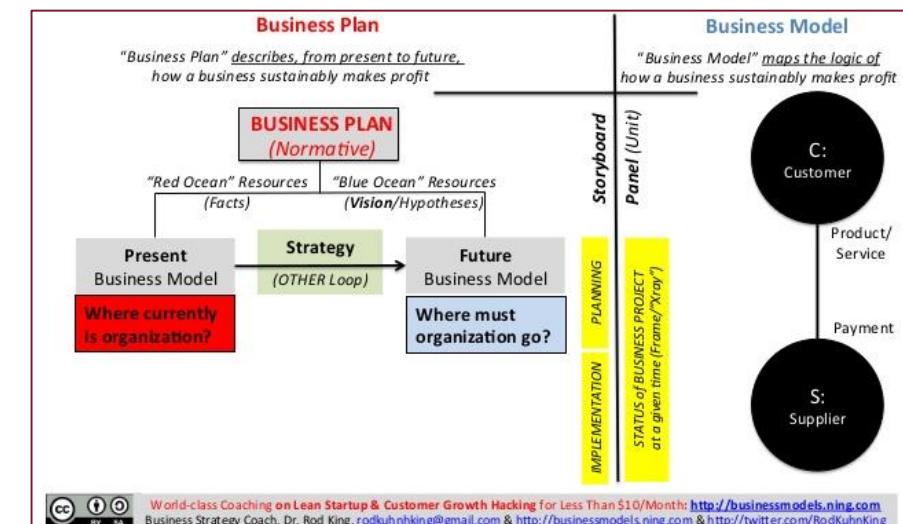
Big Data Strategy



Analysis Frameworks



1. Corporate strategy
2. Business plans and models



BUSINESS MODELS

Traditional Business Plans



IF I KEEP LOOKING, I'LL DEFINITELY
FIND SOMEBODY WHO WILL TELL ME
I SHOULDN'T PLAN

Business Plans

“Writing business plans is a waste of time. People focus on themselves too much. They think that the longer they think about it, the better the result. That’s wrong! The only true judge of an idea is the prospective customer. The longer you think about it instead of testing it, the more you maximize the risk of wasting your time.”

Alexander Osterwalde (2014)

<http://davehertig.com/2014/09/alexander-osterwalder-interview/>

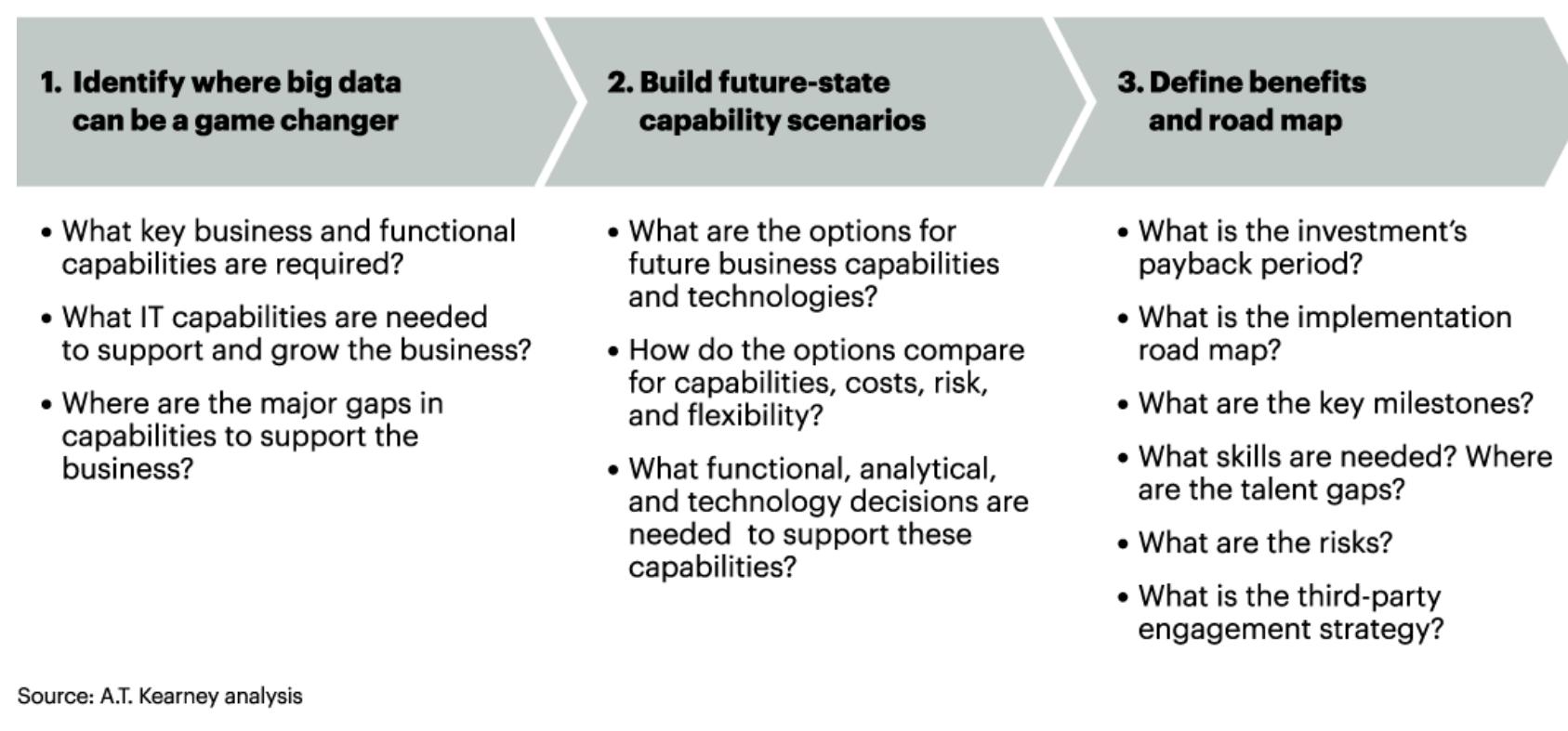
Business plans

	INTERNAL	EXTERNAL
PERSON	Company founders, management	Investors, partners, customers
OBJECTIVE	Evaluate, be transparent, have accountability	Inform and persuade
FUNCTION	Assistance in the implementation of business ideas	Communication tool
UPDATE	Continuously	Depending on the purpose

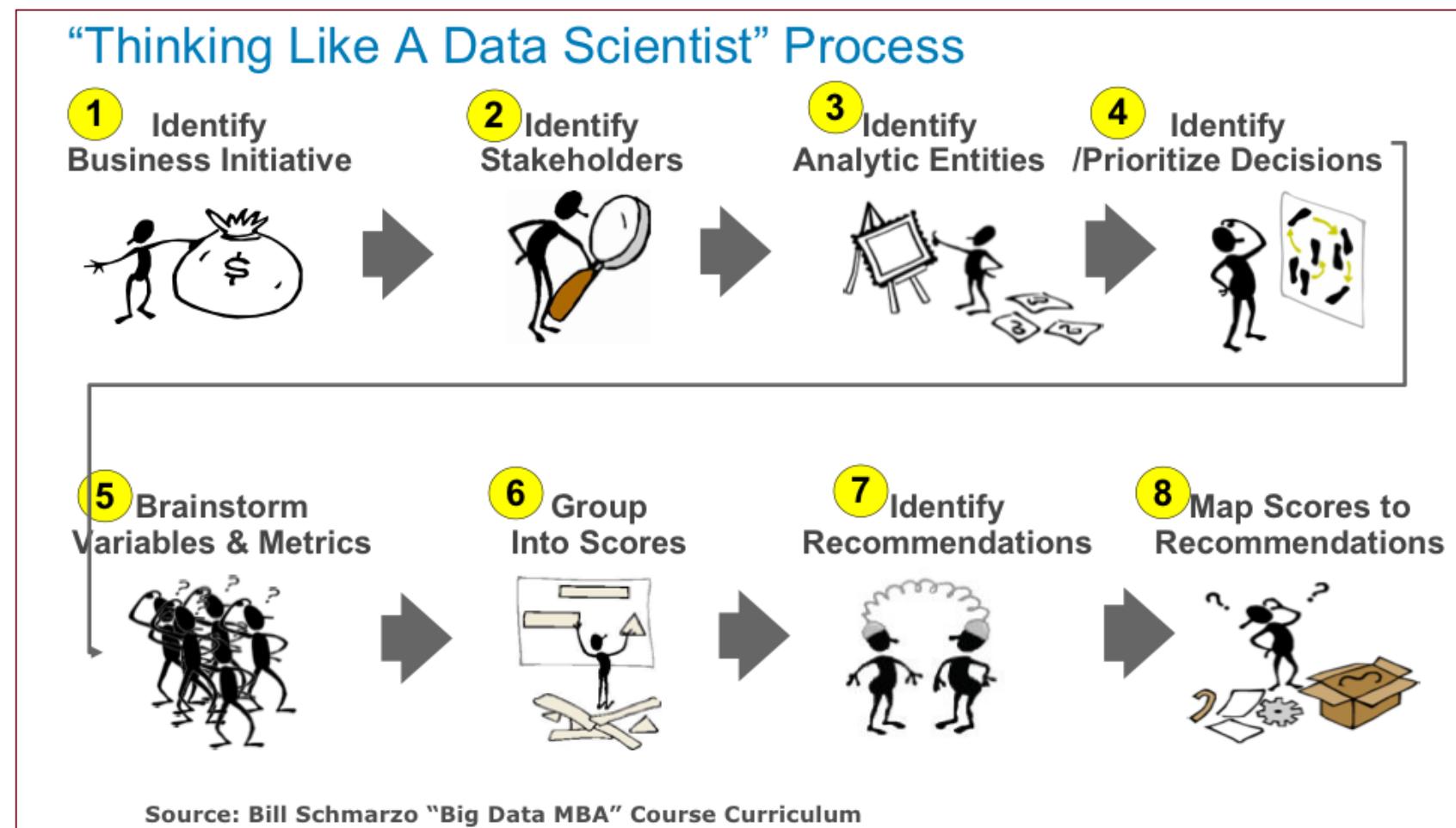
Data-driven Business Plans

Figure 8

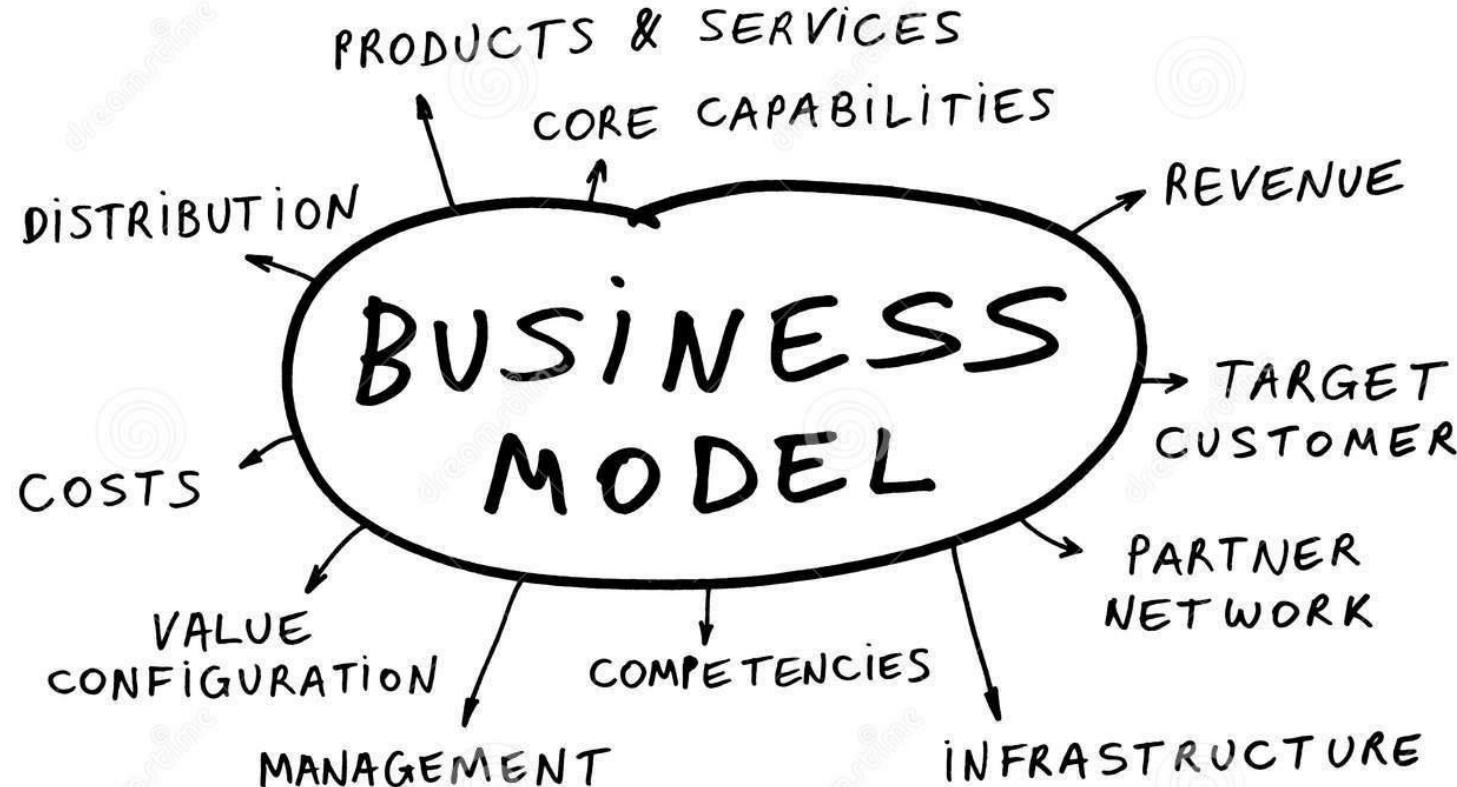
Getting started on the big data journey



Discovering the business opportunity



About Business Models



Download from
Dreamstime.com

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Business Model Components

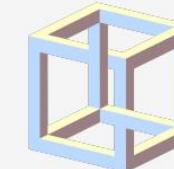
- **Who?** Customer + Channel
- **What?** Offering + Value
- **How?** Resources + Partners
- **What's in it?** Revenues + Costs

A good business model is...

... Viable



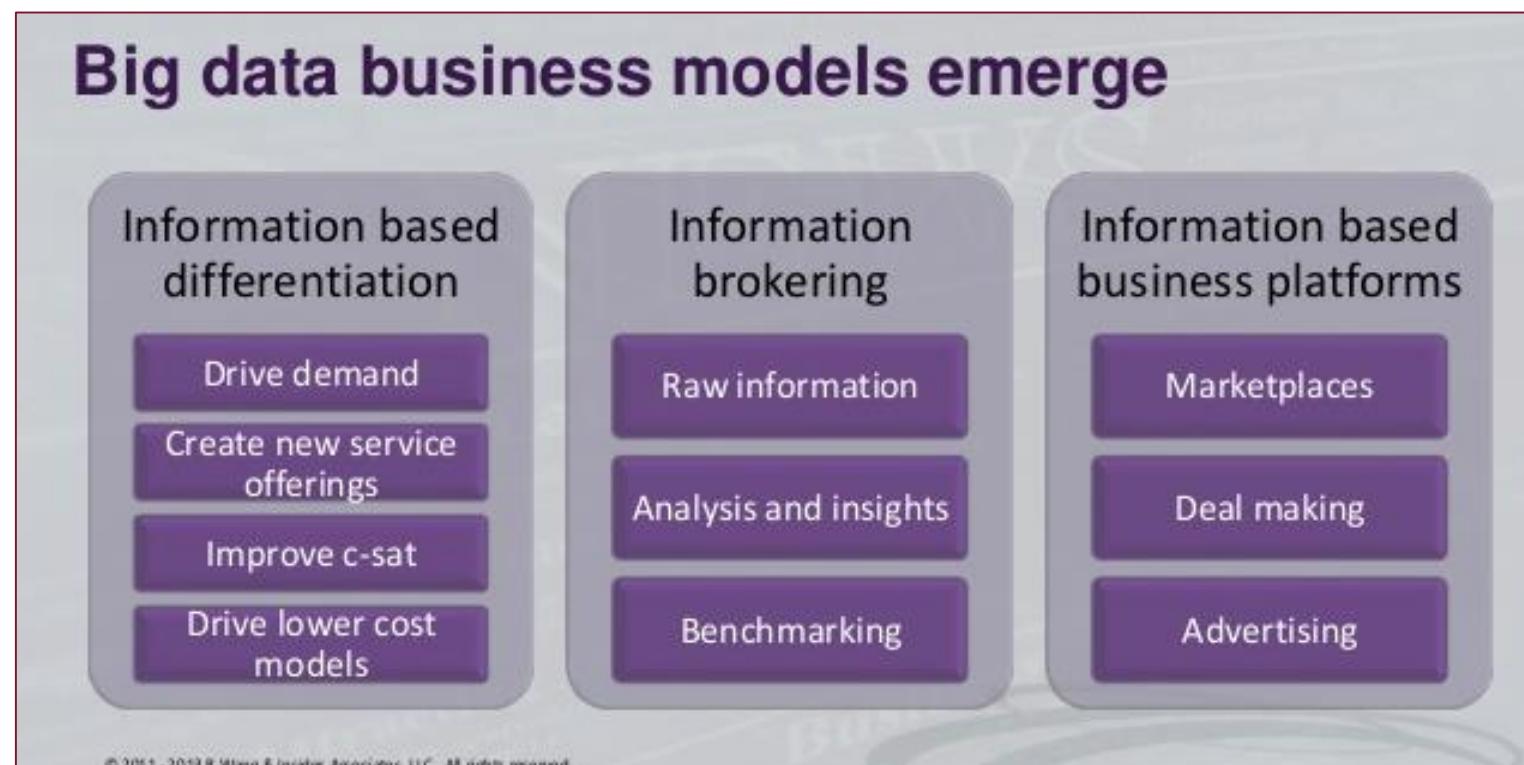
... Feasible



... Sustainable



Big Data Business Models (1)



Harvard
Business
Review

INTERNET

What a Big-Data Business Model Looks Like

by R "Ray" Wang

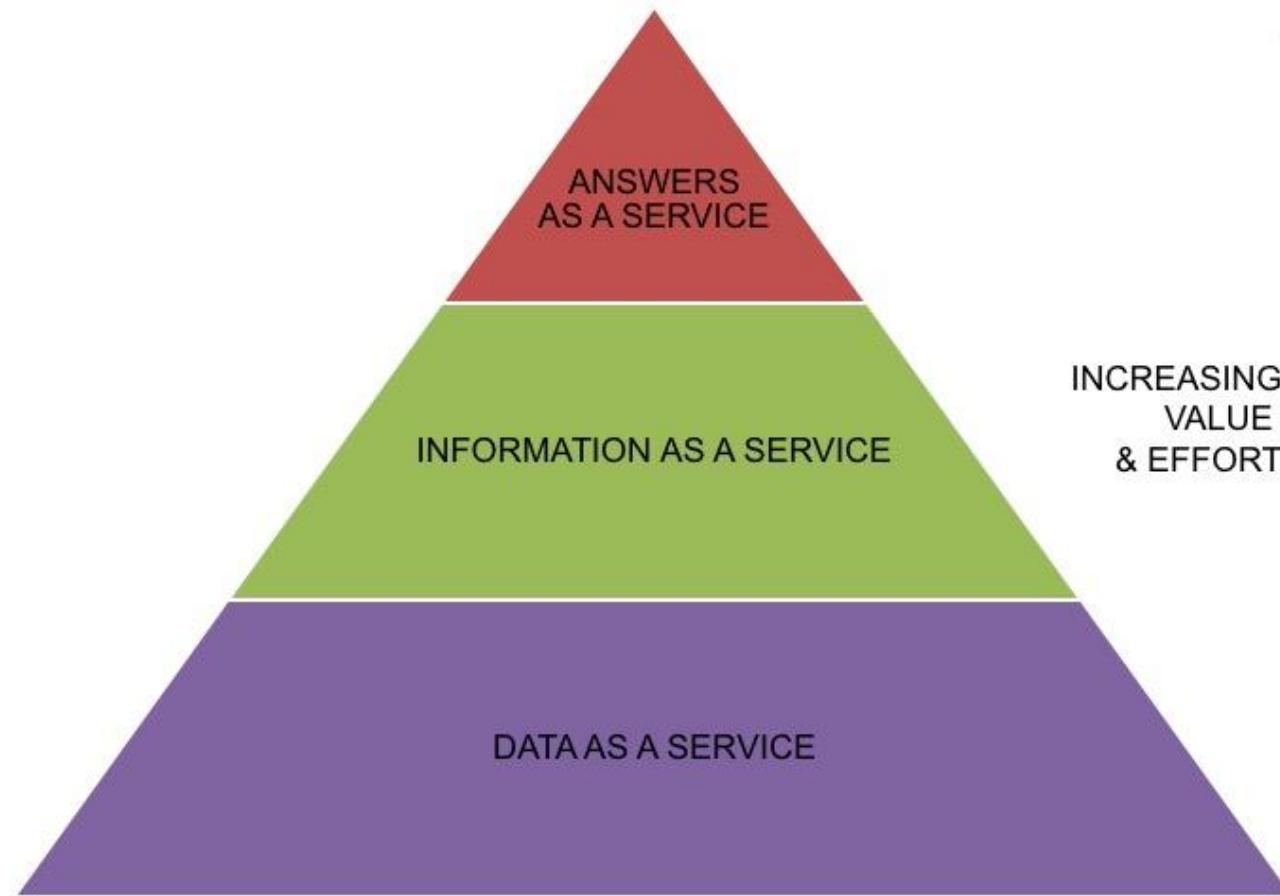
DECEMBER 06, 2012

Big Data Business Models (2)

TYPE	FUNCTIONS
DATA USERS	USING DATA TO INFORM STRATEGIC DECISIONS.
DATA SUPPLIERS	GATHERING, AGGREGATING AND SELLING DATA
DELIVERY NETWORKS	USING DATA TO PROVIDE AN ADVERTISEMENT DELIVERY PLATFORM
DATA FACILITATORS 	SUPPLYING INFRASTRUCTURE AND TOOLS TO COLLECT, STORE, AND ANALYSE DATA

SOURCE: <https://www.feedough.com/the-data-monetization-big-data-business-models/>

Big Data Business Models (3)

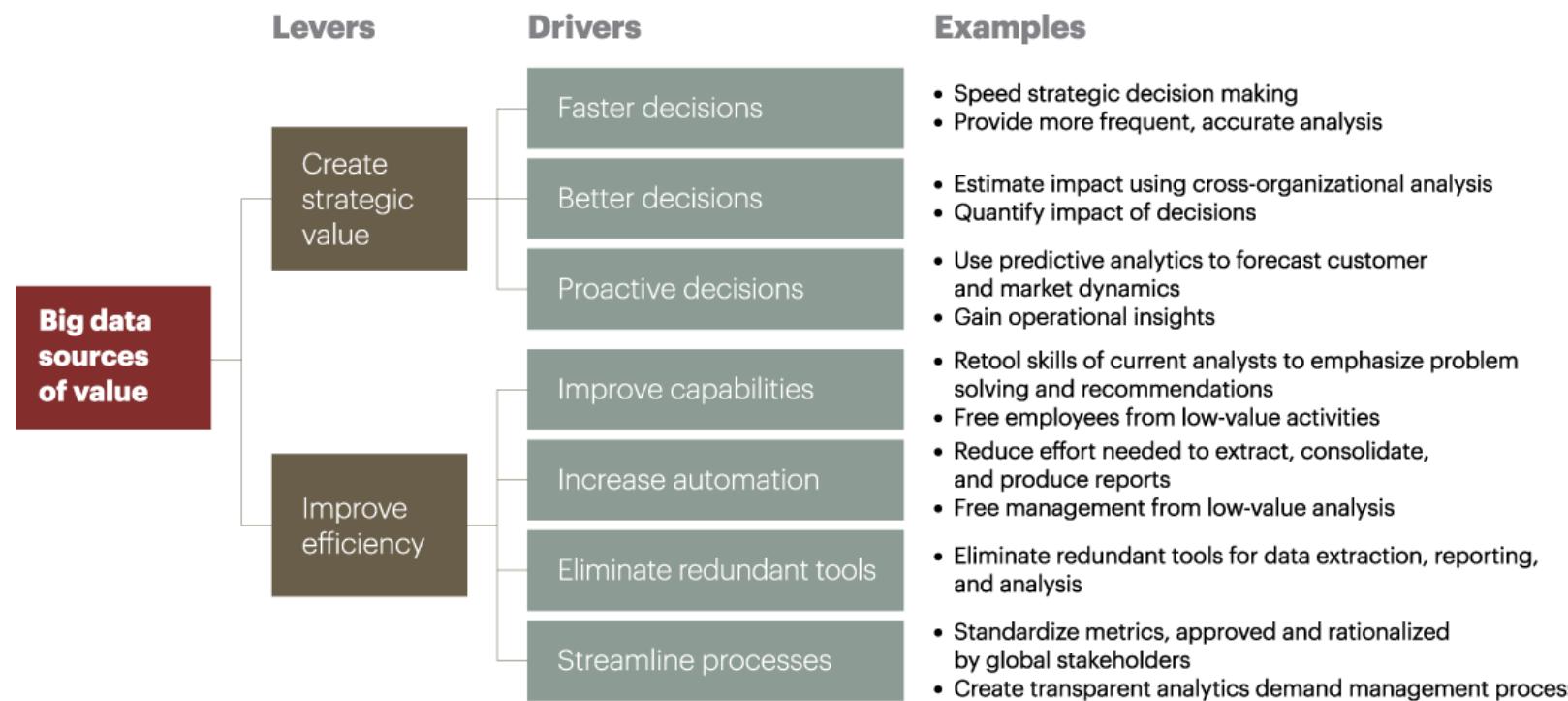


SOURCE: <https://www.businessmodelsinc.com/big-data-business-models/>

Big Data Business Models (4)

Figure 3

Harnessing big data can boost top- and bottom-line results

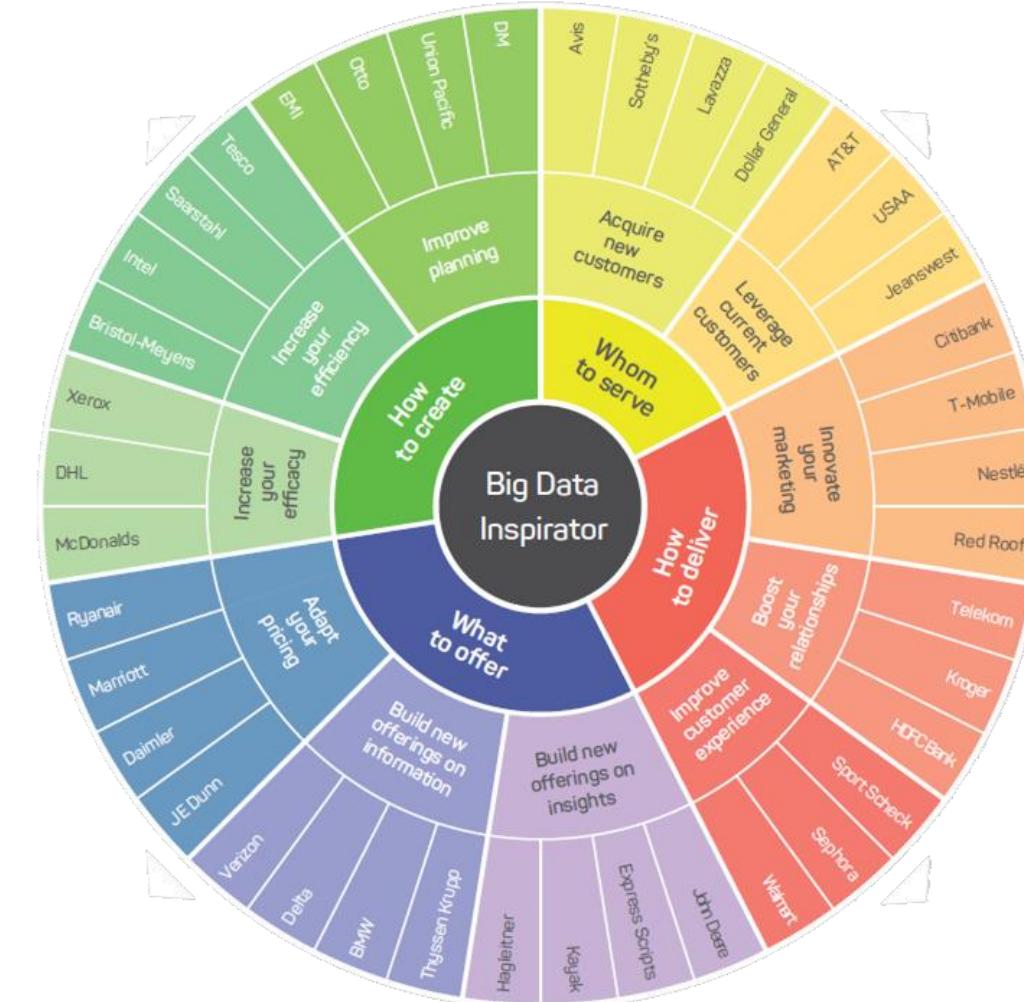


Source: A.T. Kearney analysis

SOURCE: https://www.atkearney.co.jp/strategic-it/article/-/asset_publisher/LCcgOeS4t85g/content/big-data-and-the-creative-destruction-of-todays-business-models/10192

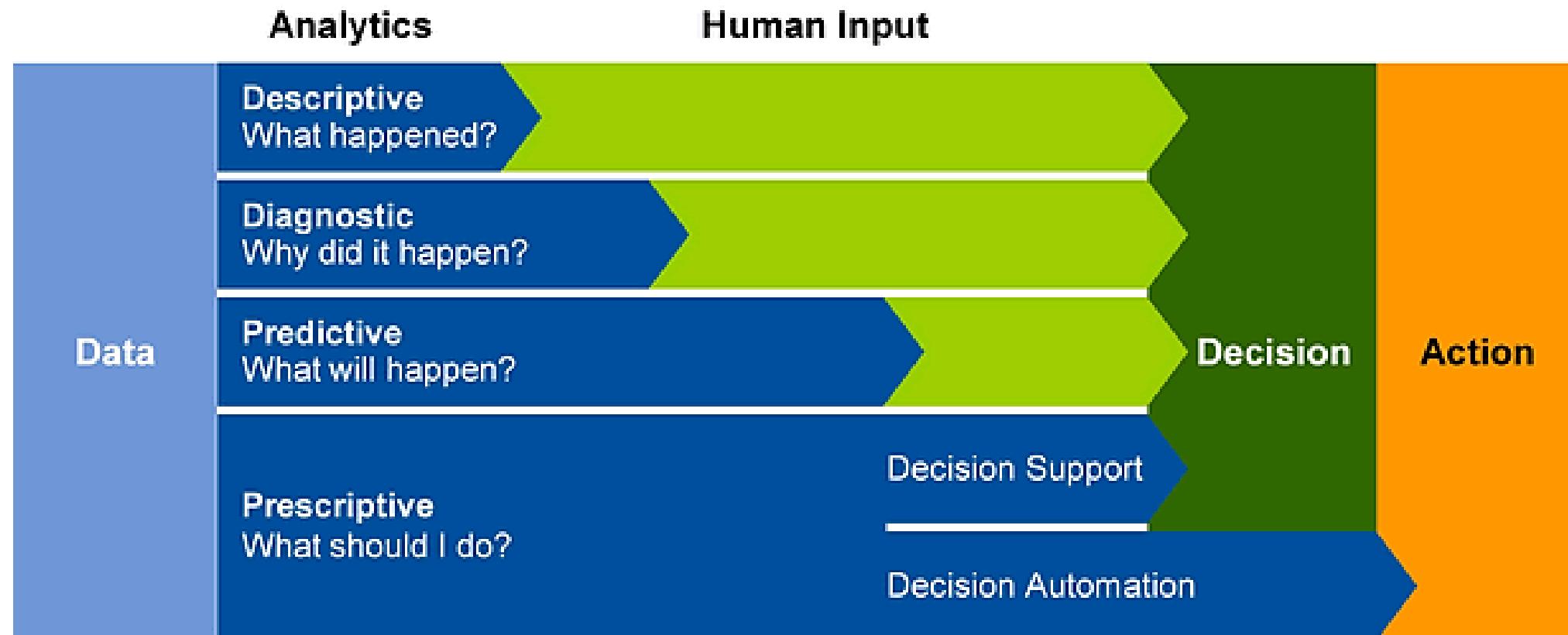
Value creation for data-driven business models

1. Acquire new customers
2. Leverage current customers
3. Innovate your marketing
4. Boost your relationships
5. Improve customer experience
6. Build new offerings on insights
7. Build new offerings on information
8. Adapt your pricing
9. Increase your efficacy
10. Increase your efficiency
11. Improve planning



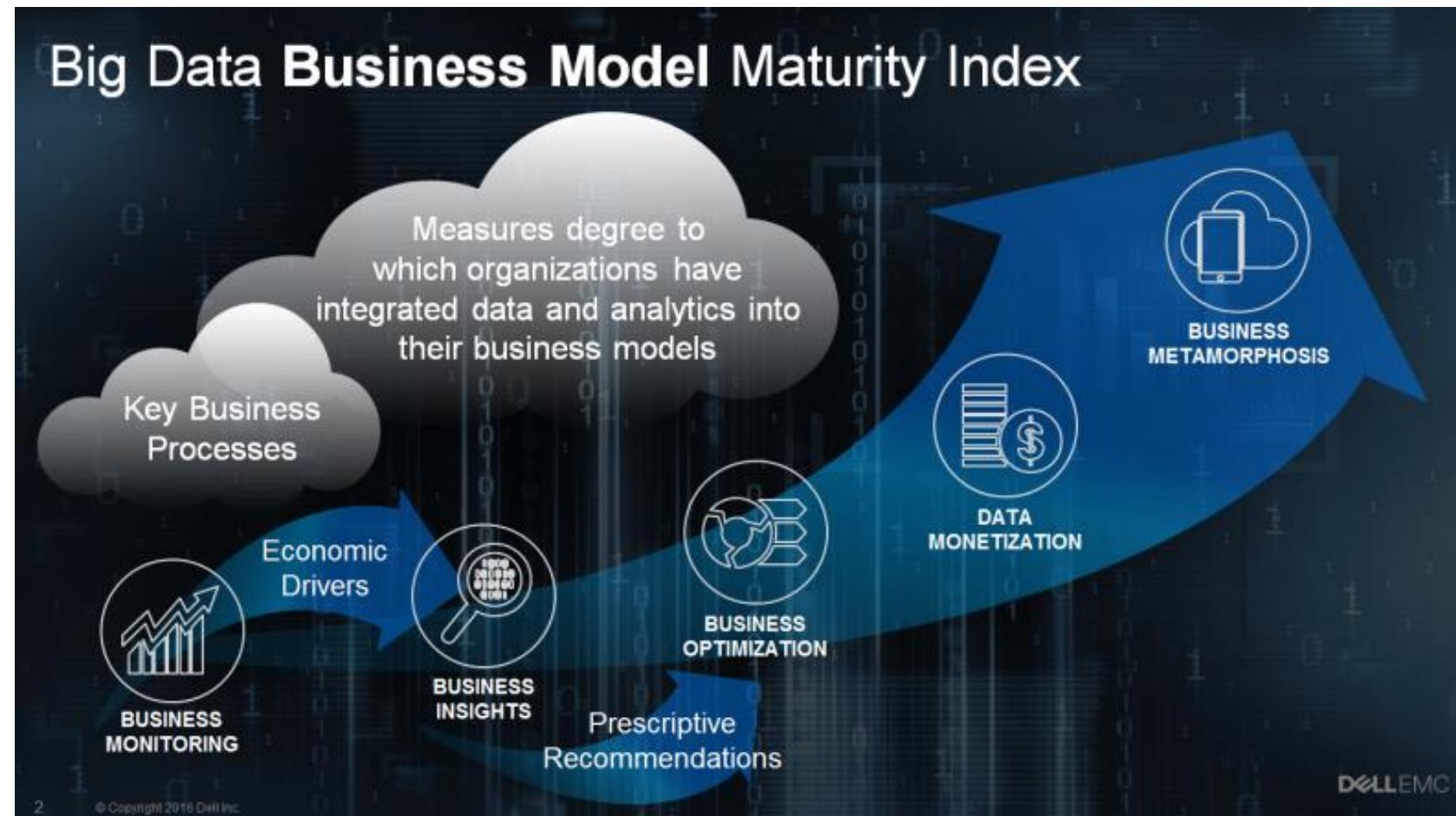
SOURCE: <http://orangehills.de/2017/02/19/how-sothebys-real-estate-identifies-potential-sellers>

Types of analytics models

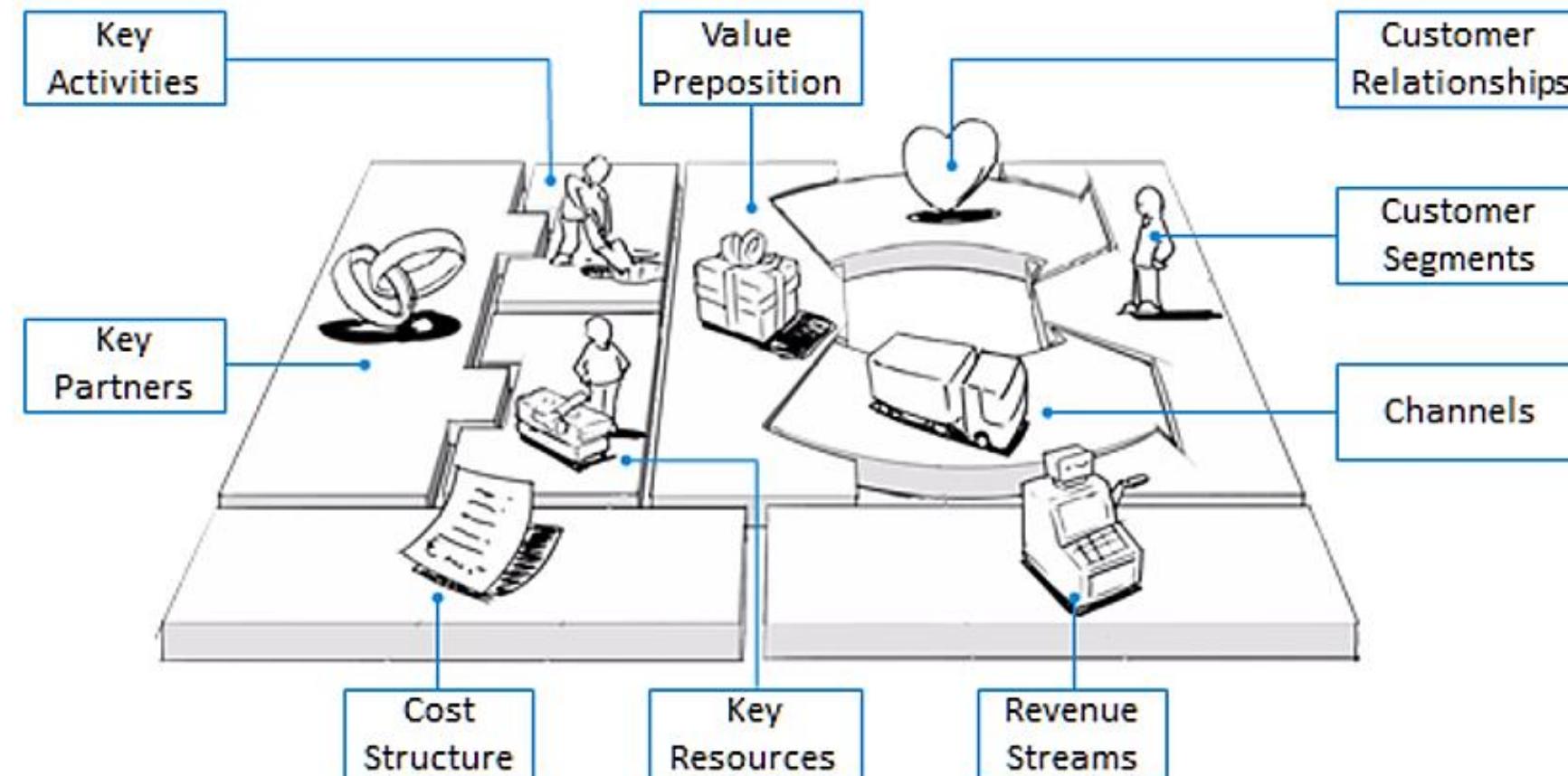


Source: Gartner

Big Data integration in the company

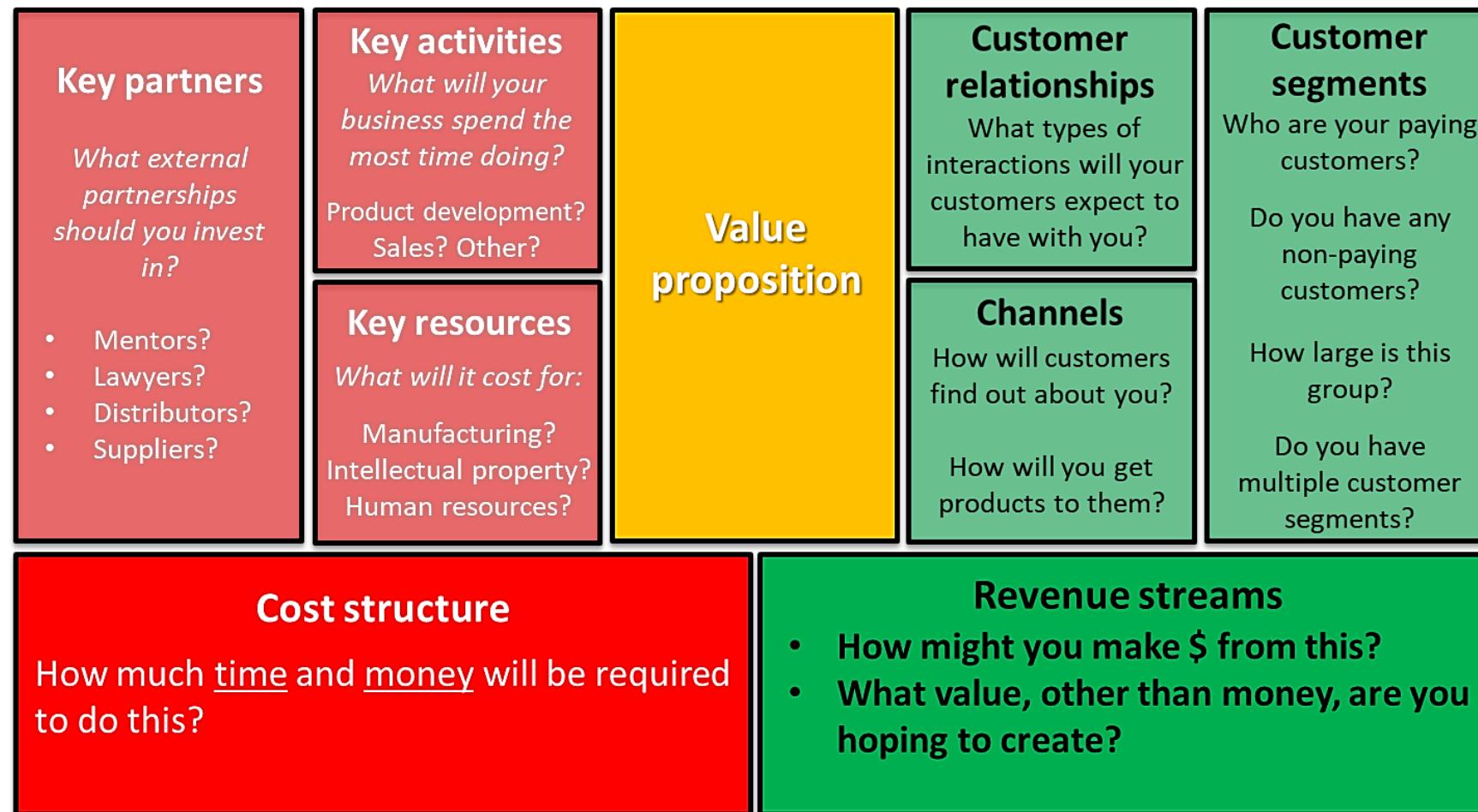


Business Model Canvas



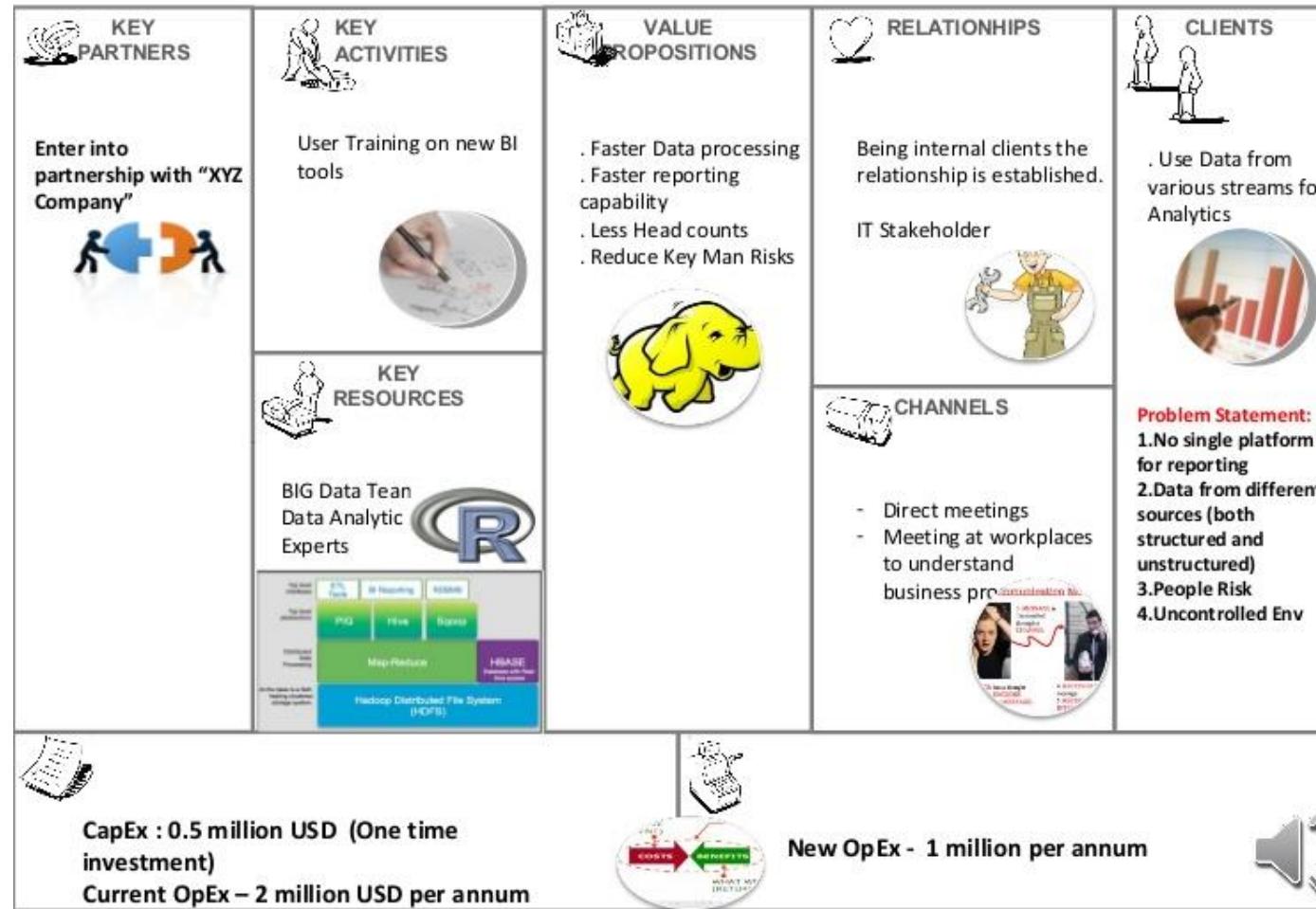
Source: TU Delft

Business Model Canvas



Business Model Canvas (example)

Solution Architecture - Business Model Canvas ([Improve Reporting Capabilities](#))

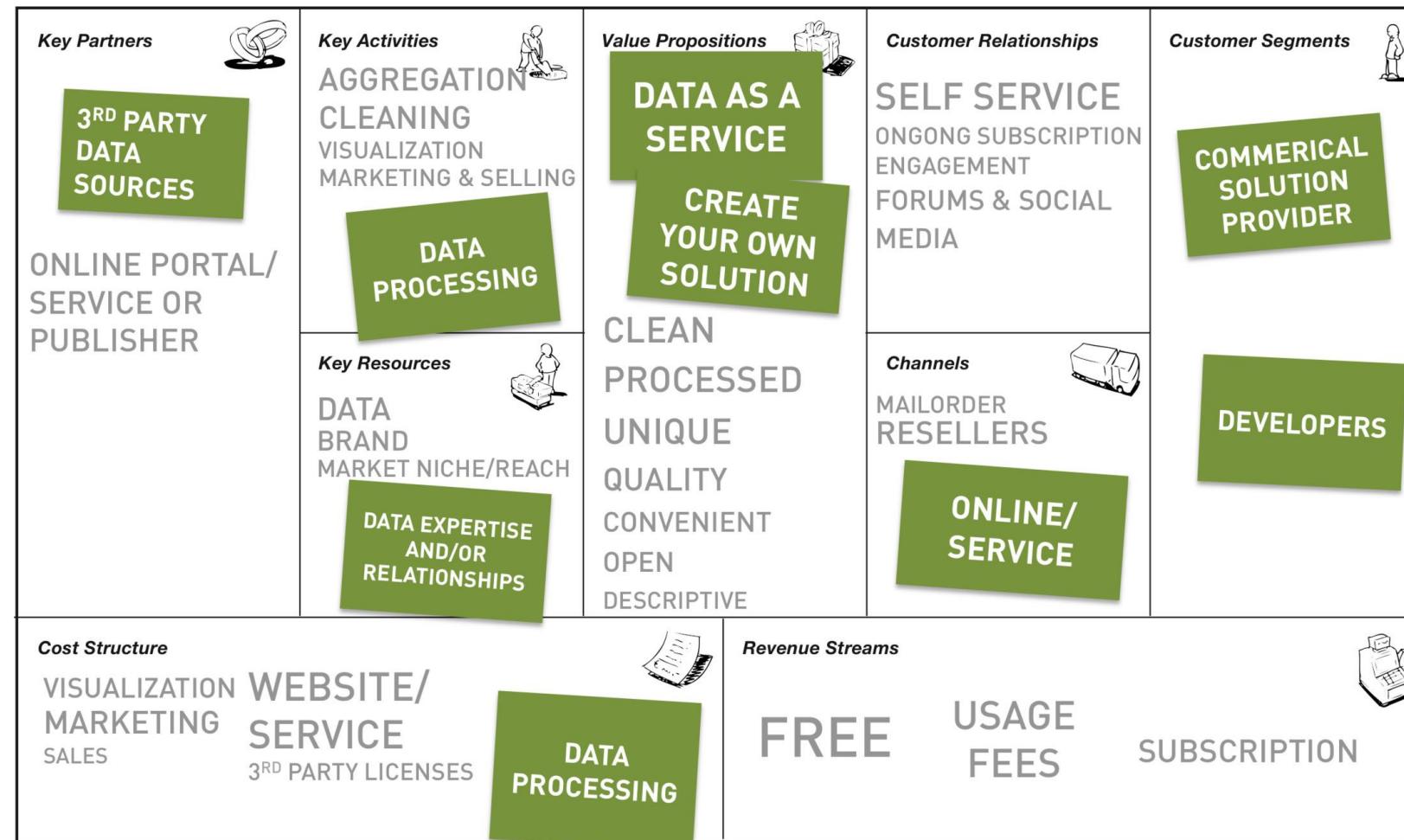


Business Model Canvas (example)



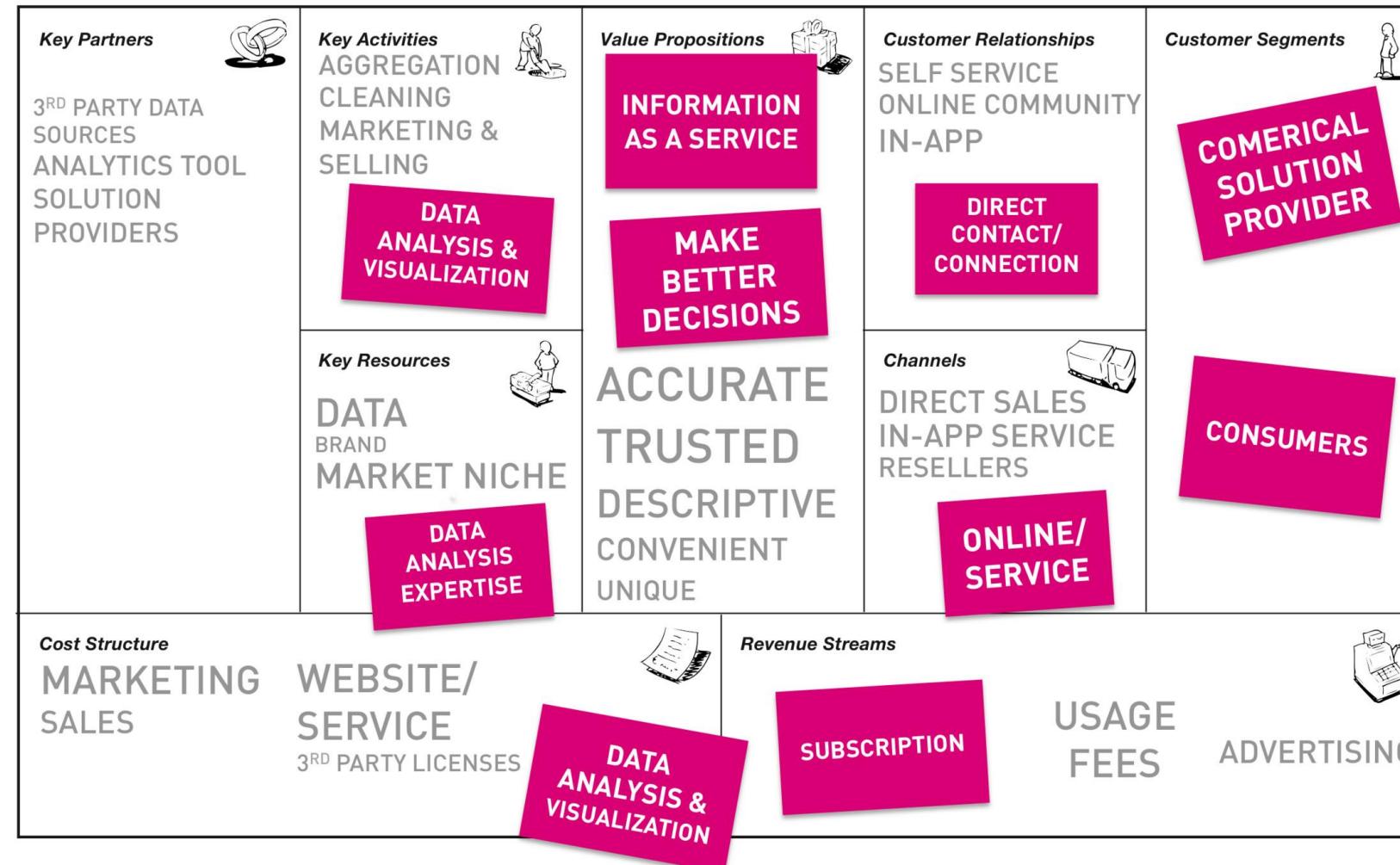
SOURCE: <https://blog.strands.com/data-business-model-banking-survival>

Business Model Canvas: DaaS



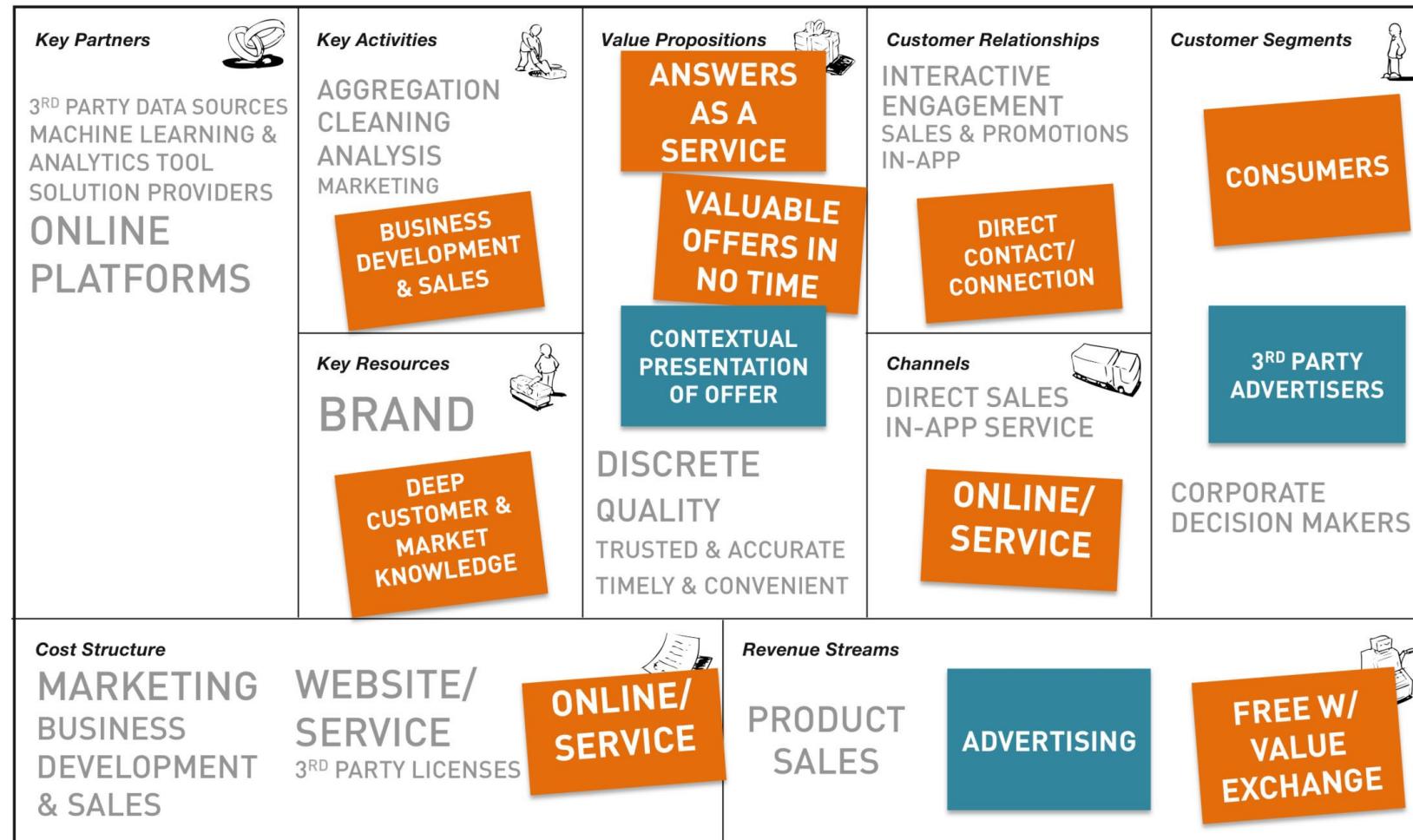
SOURCE: <https://www.businessmodelsinc.com/big-data-business-models/>

Business Model Canvas: IaaS



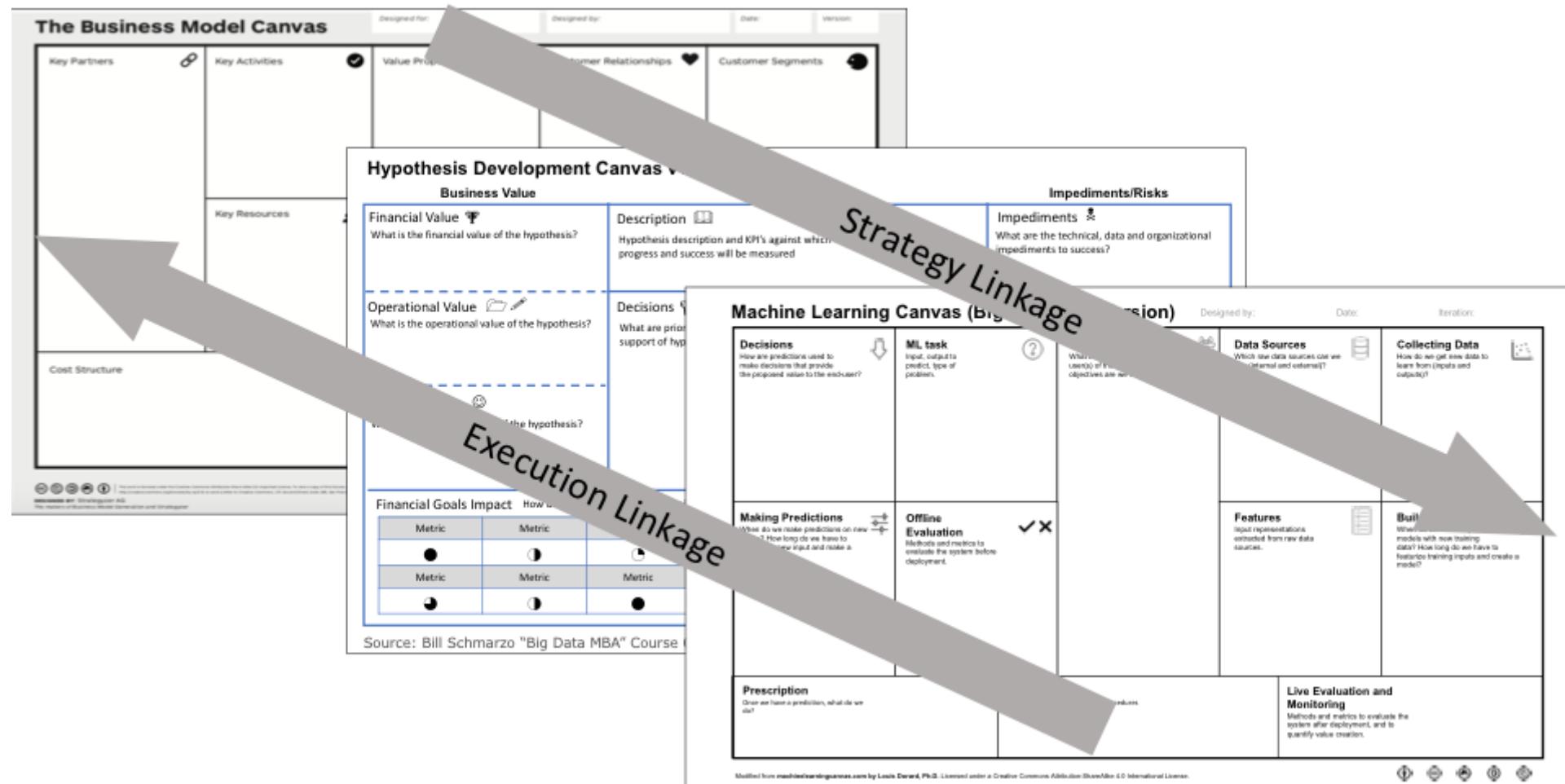
SOURCE: <https://www.businessmodelsinc.com/big-data-business-models/>

Business Model Canvas: AaaS



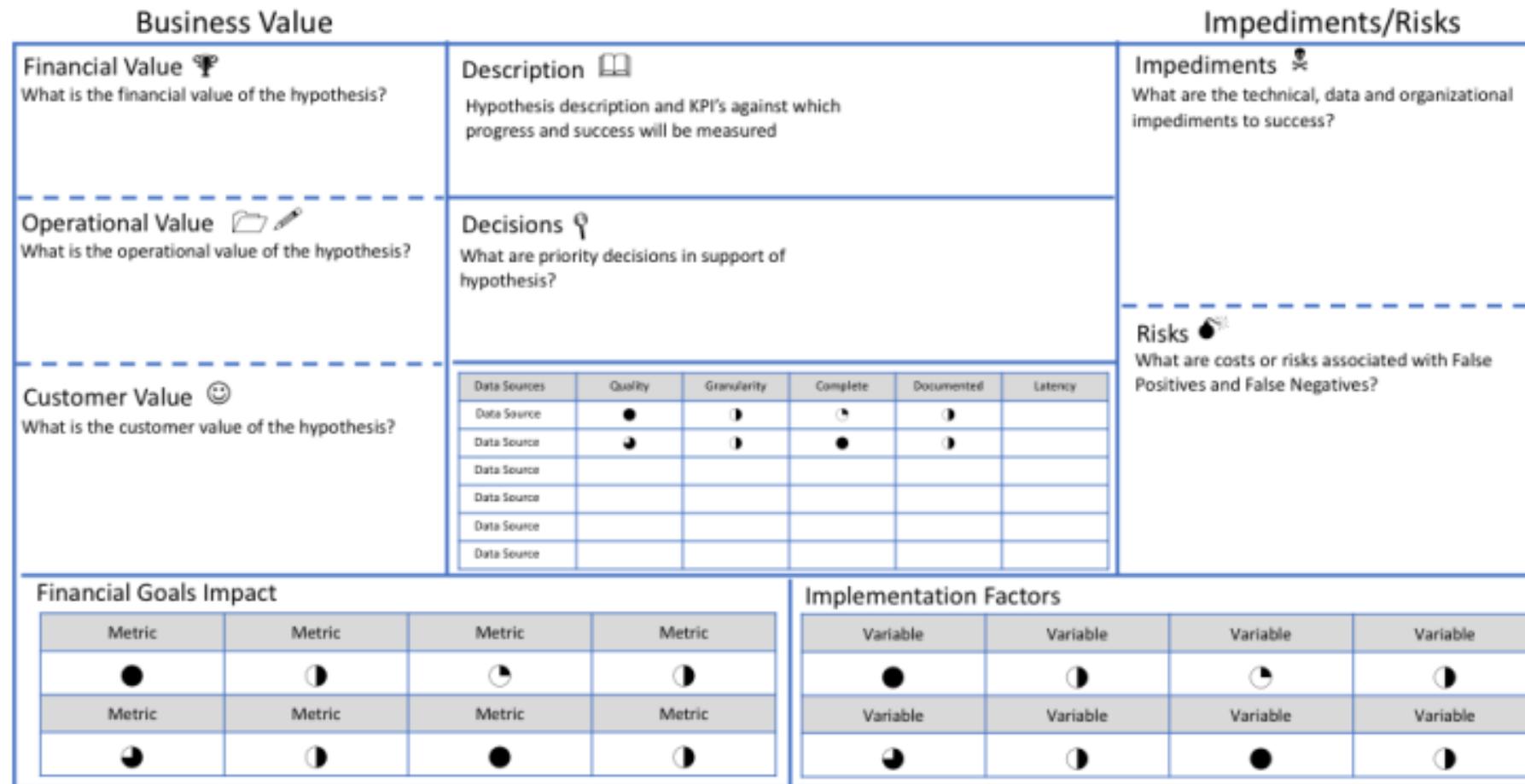
SOURCE: <https://www.businessmodelsinc.com/big-data-business-models/>

Linking Business Model to Data Science



SOURCE: <https://www.datasciencecentral.com/profiles/blogs/data-science-paint-by-the-numbers-with-the-hypothesis-development>

Hypothesis Development Canvas



Source: Bill Schmarzo "Big Data MBA" Course Curriculum

SOURCE: <https://www.datasciencecentral.com/profiles/blogs/data-science-paint-by-the-numbers-with-the-hypothesis-development>

Machine Learning Canvas

Machine Learning Canvas (Big Data MBA Version)

Designed by:

Date:

Iteration:

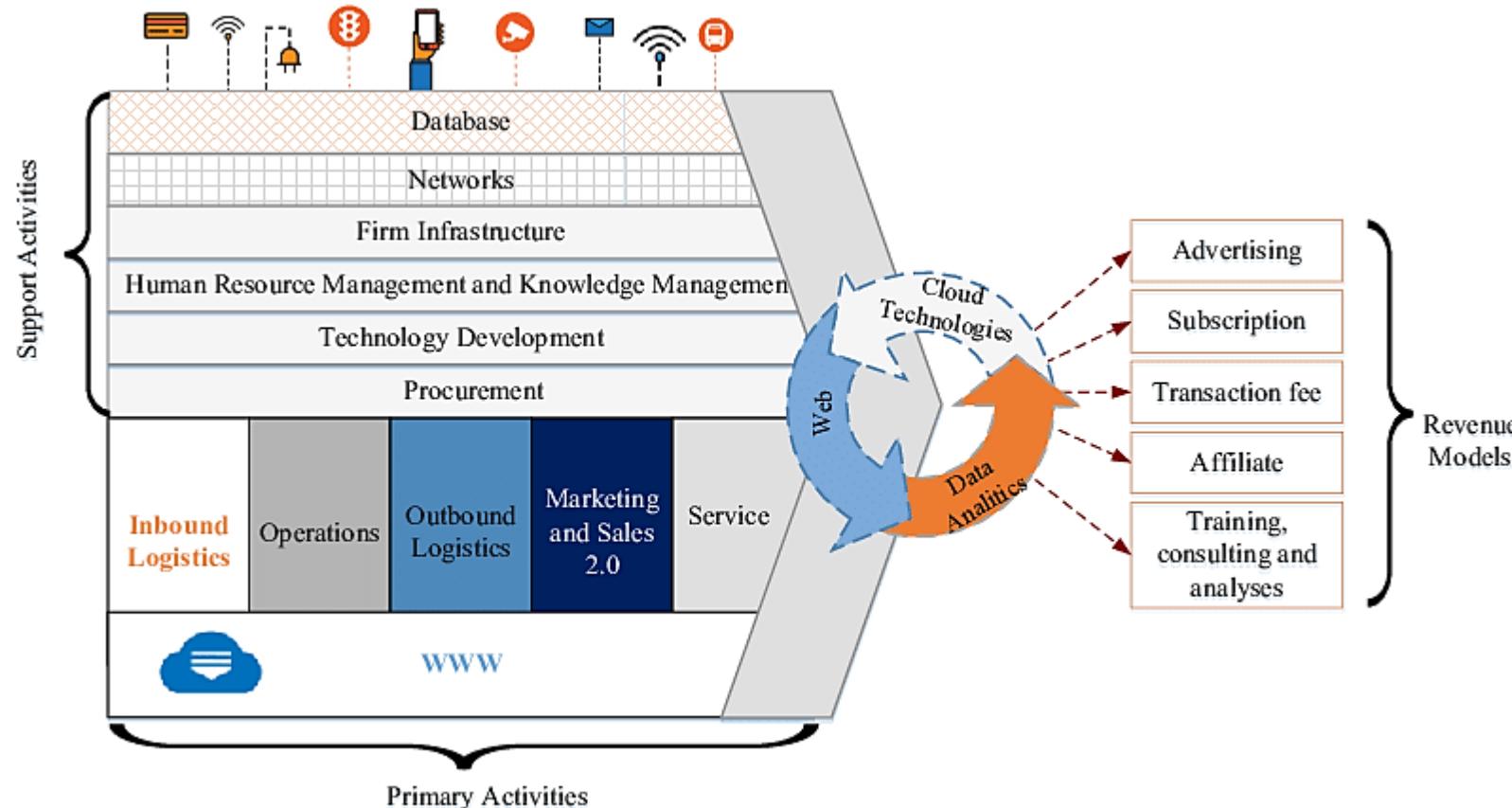
Decisions How are predictions used to make decisions that provide the proposed value to the end-user?	ML task Input, output to predict, type of problem.	Value Propositions What are we trying to do for the end-user(s) of the predictive system? What objectives are we serving?	Data Sources Which raw data sources can we use (internal and external)?	Collecting Data How do we get new data to learn from (inputs and outputs)?
Making Predictions When do we make predictions on new inputs? How long do we have to featureize a new input and make a prediction?	Offline Evaluation Methods and metrics to evaluate the system before deployment.		Features Input representations extracted from raw data sources.	Building Models When do we create/update models with new training data? How long do we have to featureize training inputs and create a model?
Prescription Once we have a prediction, what do we do?		Automation How do we automate standard procedures with the prescriptive insights?		Live Evaluation and Monitoring Methods and metrics to evaluate the system after deployment, and to quantify value creation.

Modified from machinelearningcanvas.com by Louis Dorard, Ph.D. Licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.



SOURCE: <https://www.datasciencecentral.com/profiles/blogs/data-science-paint-by-the-numbers-with-the-hypothesis-development>

Data-Driven Business Value Chain and Revenue Model



SOURCE: https://www.researchgate.net/figure/Data-Driven-Business-Value-Chain-and-Revenue-Model_fig2_319114871

RETURN ON INVESTMENT



Return On Investment

ROI Formula

$$\text{ROI} = \left(\frac{\text{Gain From Investment} - \text{Cost Of Investment}}{\text{Cost Of Investment}} \right) \times 100$$

(Return on Investment)

What does it mean?

Gain from investment: Refers to your net income or profit for the year

Cost of Investment: Refers to the total amount you invested

Template.net

“Return on Investment (ROI) is a performance measure used to evaluate the efficiency of an **investment** or compare the efficiency of a number of different **investments**.”

- *Investopedia*

Return On Investment

Better Insights. Better Performance

THE ROI OF BIG DATA, ANALYTICS
& BENCHMARKING

57%

number of data-driven companies
that expect to improve planning and
forecasting

SOURCE: Bain & Co., Salesforce, Constant Contact

Better Insights. Better Performance

THE ROI OF BIG DATA, ANALYTICS
& BENCHMARKING

9%

average increase in profits from big
data investments after five years

SOURCE: McKinsey & Company

Better Insights. Better Performance

THE ROI OF BIG DATA, ANALYTICS
& BENCHMARKING

200%

average return on big data
investments for the average company
after five years

SOURCE: McKinsey & Company

Better Insights. Better Performance

Better Insights. Better Performance

THE ROI OF BIG DATA, ANALYTICS
& BENCHMARKING

61%

number of data-driven companies
that expect to improve the quality and
speed of decision-making

SOURCE: Bain & Co., Salesforce, Constant Contact

Better Insights. Better Performance

THE ROI OF BIG DATA, ANALYTICS
& BENCHMARKING

Data-driven companies are

2x

more likely to have top-quartile
performance

SOURCE: Bain & Co., Salesforce, Constant Contact

Better Insights. Better Performance

THE ROI OF BIG DATA, ANALYTICS
& BENCHMARKING

\$64m

amount of additional net income
a 10% increase in data accessibility delivers
to the average *Fortune 1000* company

SOURCE: Baseline

ROI for Big Data projects means...



Produits Solutions Clients Services et assistance À propos



calculations start to happen. But how exactly do you measure your return?

THE INTERPLAY OF HARD AND SOFT BENEFITS

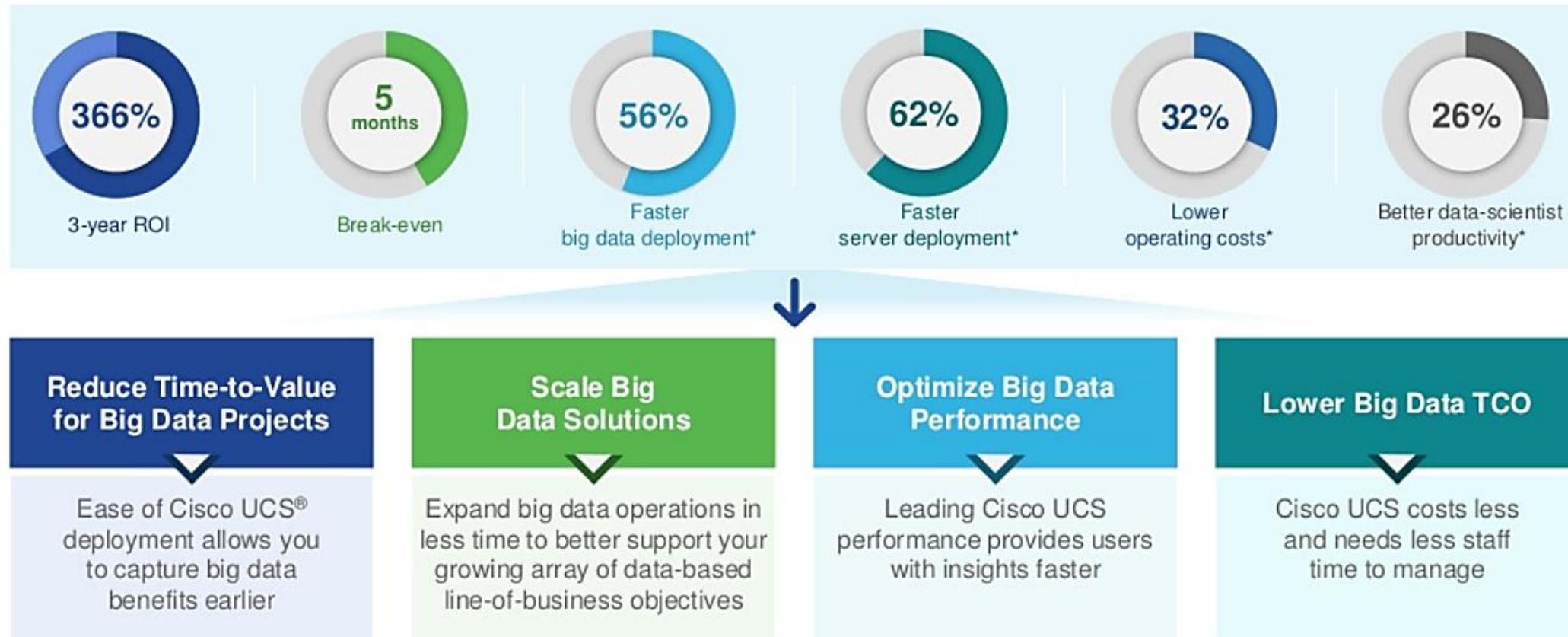
ROI calculations typically describe hard benefits—profits, sales, or savings. After all, you must see financial benefits from any project you onboard. However, before those hard benefits can be realized, you must also consider the role of soft benefits, the nonfinancial or intangible benefits derived from your ROI journey.

When it comes to big data ROI, the skills your team gains from early projects are likely to be the first returns you realize. On the path to data maturity, gaining skills is a measure your company should take seriously. No matter the scenario or use case, having the skills to master big data tasks is a major step toward enabling your future ROI measures.

Through knowledge gains, your internal teams become experienced enough to take on data initiatives and run them themselves or in partnership with external resources. This drives internal productivity, which **ultimately fuels the big data projects** that deliver the hard ROI you're looking for.

SOURCE: <https://fr.hortonworks.com/article/measuring-big-data-roi-a-sign-of-data-maturity/>

Return On Investment: Cisco



* Compared to other solutions considered by interviewed organizations



Return On Investment: Cisco

Business Productivity Benefits	IT Staff Productivity Gains	Operating Cost Efficiencies and Reliability
<p>IDC projects that big data operations based on Cisco UCS® will deliver an average of US\$4.19 million per year over 3 years:</p> <ul style="list-style-type: none">• Increasing employee productivity• Enabling higher revenue through services and products supported by scalability, performance and fast deployment of Big Data operations	<p>IDC predicts that each business will achieve IT staff productivity benefits worth an average of US\$550,000 per year over 3 years:</p> <ul style="list-style-type: none">• Achieving greater productivity for application development teams by reducing time to deploy resources, higher application performance	<p>IDC calculates that each organization will achieve IT infrastructure cost reductions averaging US\$17,000 per year over 3 years:</p> <ul style="list-style-type: none">• Cisco UCS has a 3-year cost of operations that is 32% less than other platforms• High reliability will result in just ½ hour of downtime per user per year

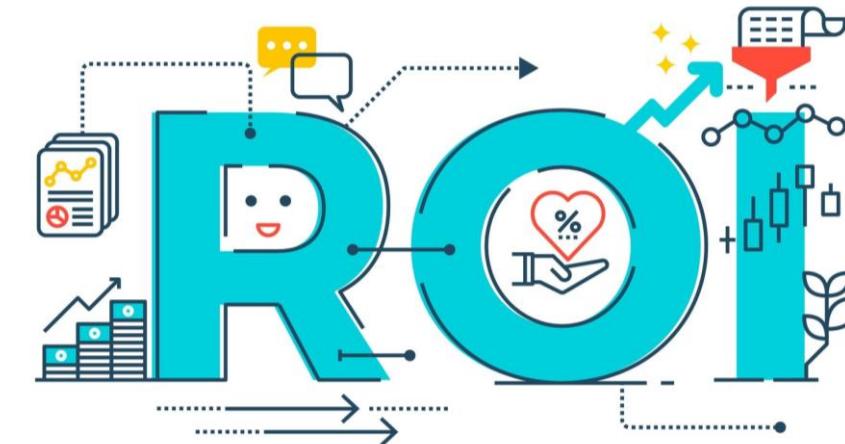
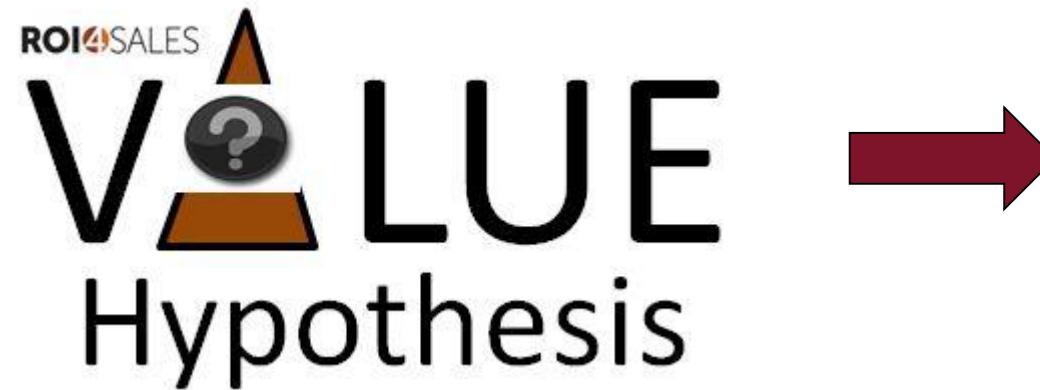


Return On Investment: Cisco

Attribute	Per Organization	Per Cisco UCS® Server
Benefit (discounted)	US\$11.35 Million	US\$80,284
Investment (discounted)	US\$2.44 Million	US\$17,244
Net Present Value (NPV)	US\$8.91 Million	US\$63,040
Return on Investment (ROI)	366%	366%
Payback (months)	4.9	4.9
Discount Rate	12%	12%



Value Hypothesis



Your main goal here



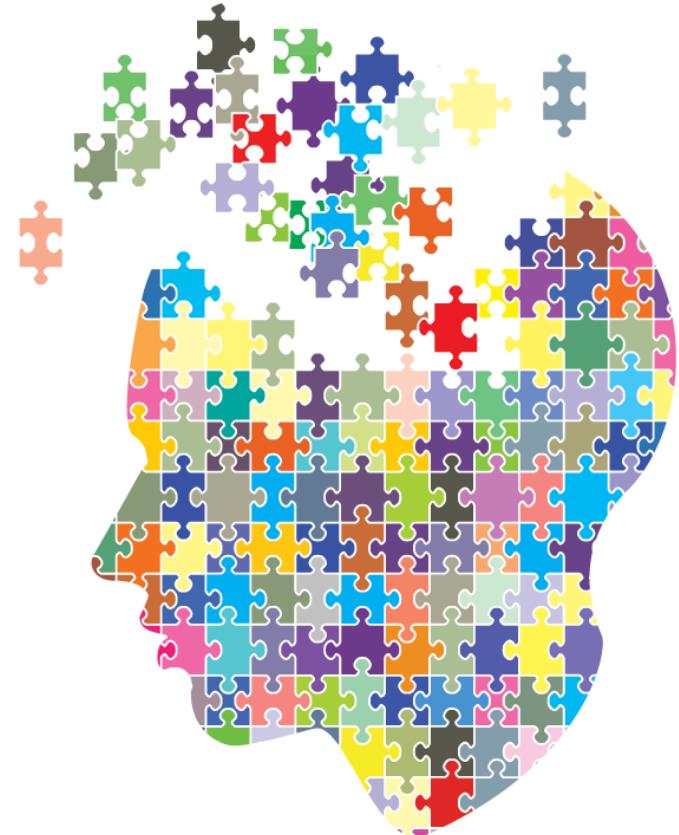
TEAM WORK

- Definition of the business case
- Business Model Canvas
- Value hypotheses and ROI



Our learning goals today

- ✓ Review **Alteryx assignment** together
- ✓ Learn about the **Business Canvas Model**
framework to analyze data-driven companies
- ✓ Discuss about **Return on Investment (ROI)** and
value hypothesis for Big Data projects





FOR NEXT WEEK...

For next week

- ✓ Submit the **Weekly Learning Journal** for Session 6 (ASAP)
- ✓ Continue working offline with your team to complete
 - **Definition of the business case**
 - **Business Model Canvas**
 - **Value hypotheses and ROI**



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