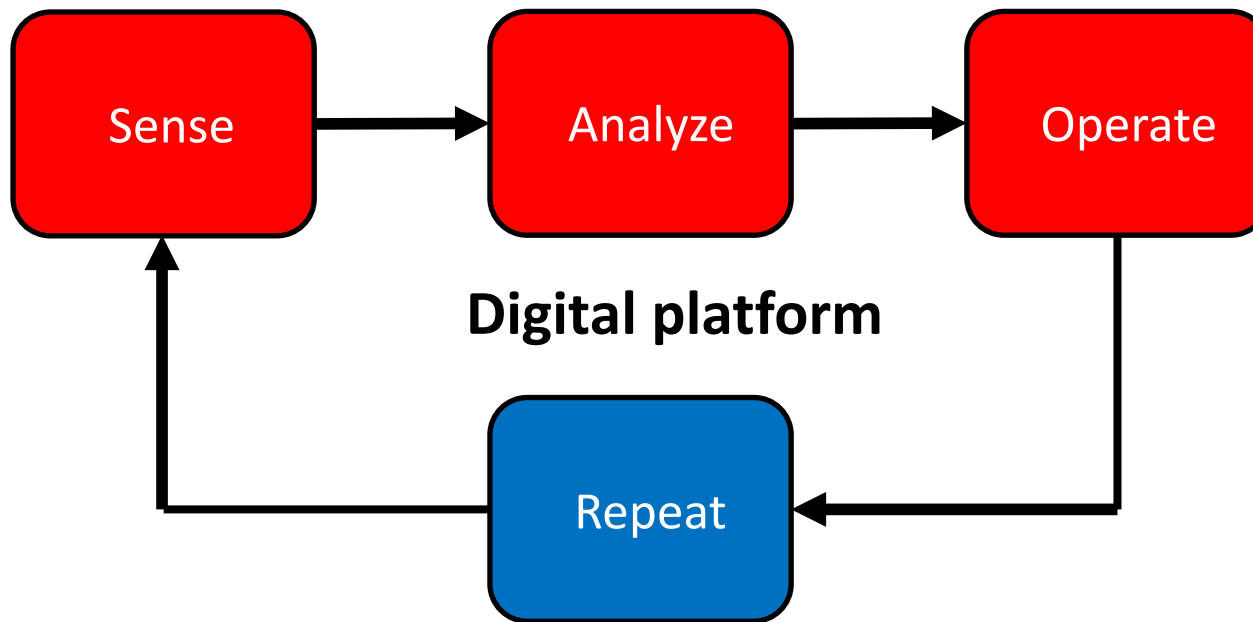# Strategy for Business Analytics

BU7145

The contents of this presentation rely heavily upon materials developed by John (Qi) Dong
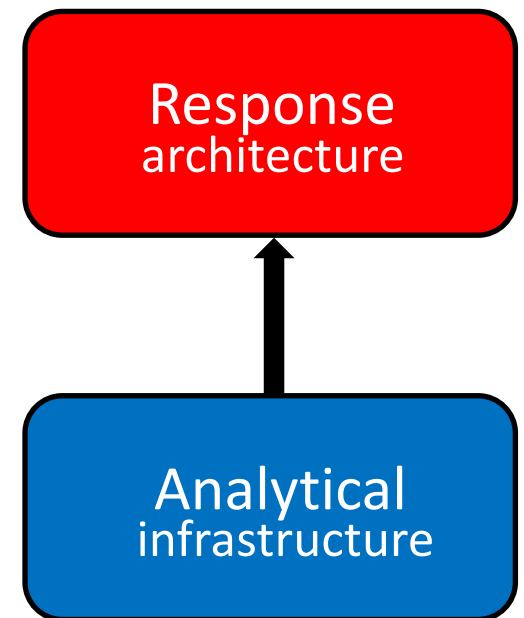
Dr. Nicholas P. Danks
Business Analytics
nicholas.danks@tcd.ie

Framework 1

Developing a data-driven strategy

Types of Responses:
- Response to desire
- Curated offering
- Coach Behavior
- Automatic Execution

Sense → **Analyze** → **Operate**

Digital platform

Repeat

+

Response architecture

Analytical infrastructure

Types of Analytics:
- Descriptive
- Predictive
- Prescriptive

Digital Platforms

E.g. Apps, Websites, Digital products (Amazon Dot)

Collect information about customers
Behaviors (Spending patterns, tastes),
Search terms,
Requests,
co-purchases,
Demographic info (name, id, etc.)
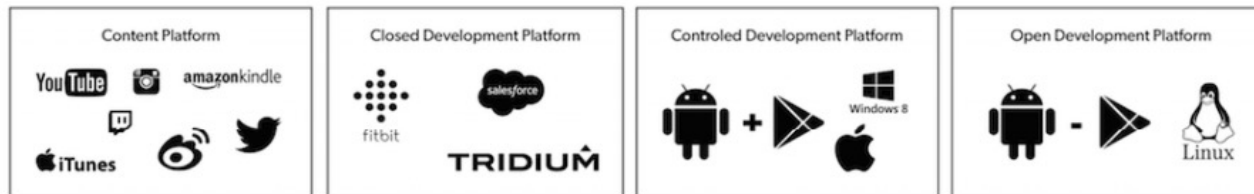**Link to external databases**
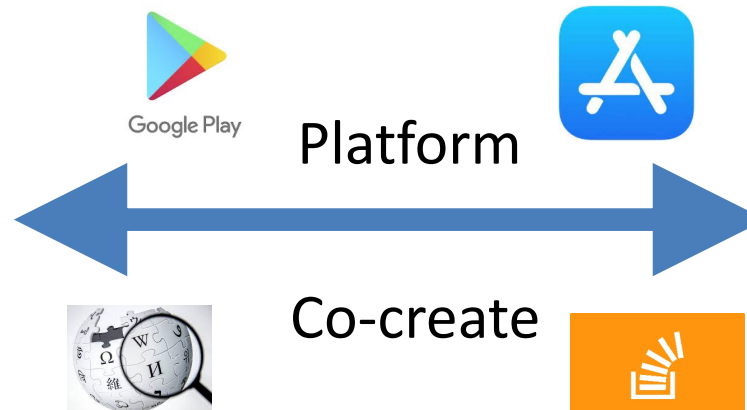**Analyze data**
Act on the data,
Repeat

Types of Platforms

Data collected by Platforms

https://trends.google.com/trends/explore?q=covid&geo=IE

Interest over time

Interest by city — City — Showing 1-5 of 47 cities

	City		
1	Galway	100	
2	Carrigaline	97	
3	Greystones	94	
4	Malahide	89	
5	Tribley	89	

☐ Include low search volume regions

Related topics — Rising

1	Omicron - Topic	Breakout
2	Booster dose - Topic	Breakout
3	Isolation - Health care	+950%
4	Antigen - Topic	+550%
5	Rapid antigen test - Topic	+550%

Related queries — Rising

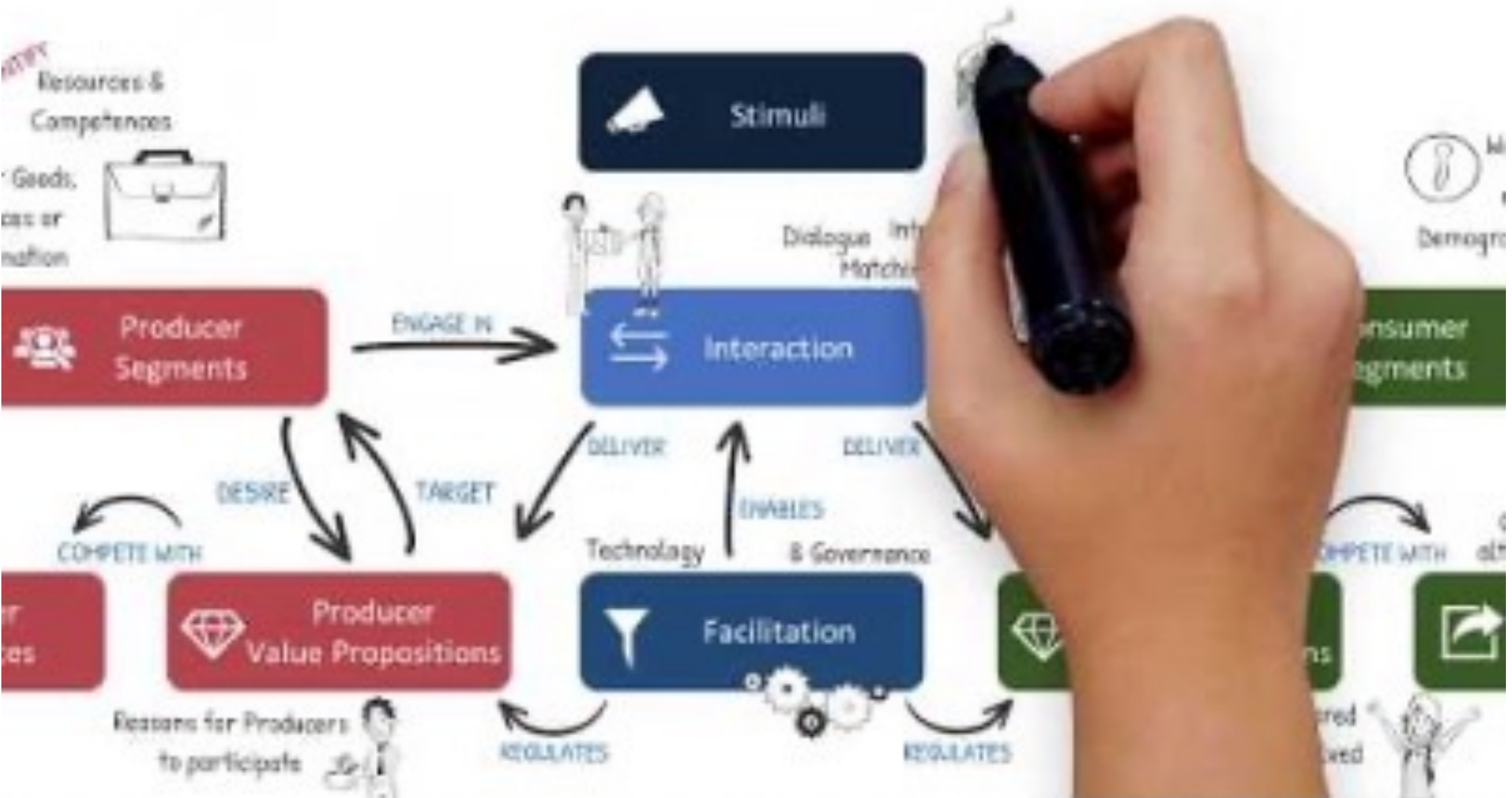|		
1	omicron symptoms	Breakout
2	hse covid booster	Breakout
3	covid booster walk in	Breakout
4	book covid booster	Breakout
5	symptoms of omicron covid	Breakout

What data do they have?

Consider for a minute, a popular platform you often use.

Let's brainstorm **what data they collect** or could have access to.

What could **they know / do** with that information?

Framework for designing a digital platform

Network Effects

ONE-SIDED MARKET

SUPPLIER — Value → COMPANY — Value → CUSTOMER
SUPPLIER ← Revenue — COMPANY ← Revenue — CUSTOMER

TWO-SIDED MARKET

DOWNSTREAM CUSTOMER — Value → INTERMEDIARY — Value → UPSTREAM CUSTOMER
DOWNSTREAM CUSTOMER ← Revenue — INTERMEDIARY ← Revenue — UPSTREAM CUSTOMER

Examples (positive effects of more supply side actors to the demand side actors):

Uber (more drivers):
• Lower procis*
• Faster pick-ups
• Wider geographical coverage

Airbnb (more hosts):
• Lower prices
• More choices
• Wider geographical coverage

Ebay (more sllers):
• Lower prices
• More choice

Paypal (more merchants)
• Lower transaction costs
• Increasing convenience

*most notable in surge pricing

More demand

Platform manages interactions, the effects of the sides on each other and their growth
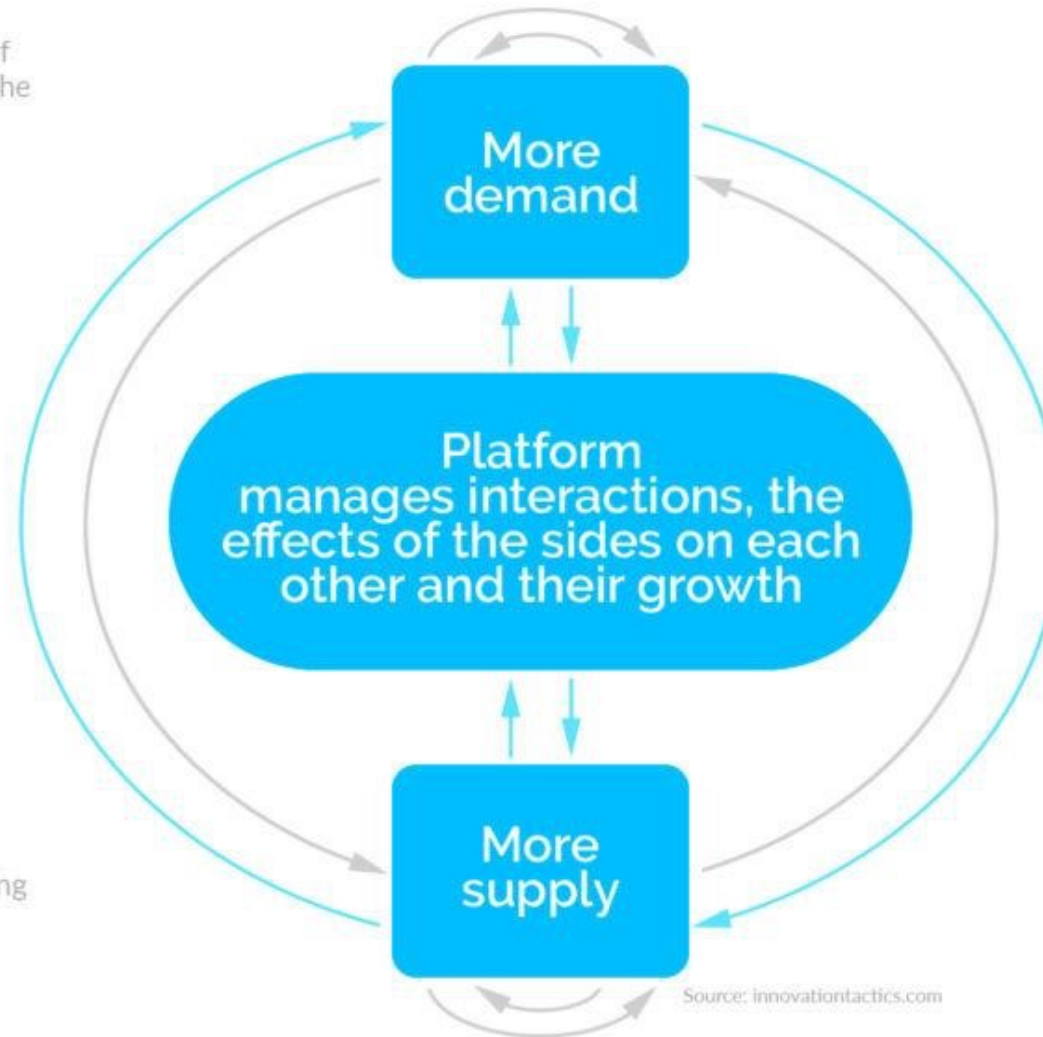
More supply

Examples (positive effects of more demands side actors to the supply side actors):

Uber (more passengers):
• Less idle time for drivers

Airbnb (more guests):
• Higher utilization

Ebay (more buyers):
• Higher revenue & margins
• Economies of scale

Paypal (more users):
• Lower sales
• Lower unit transaction costs

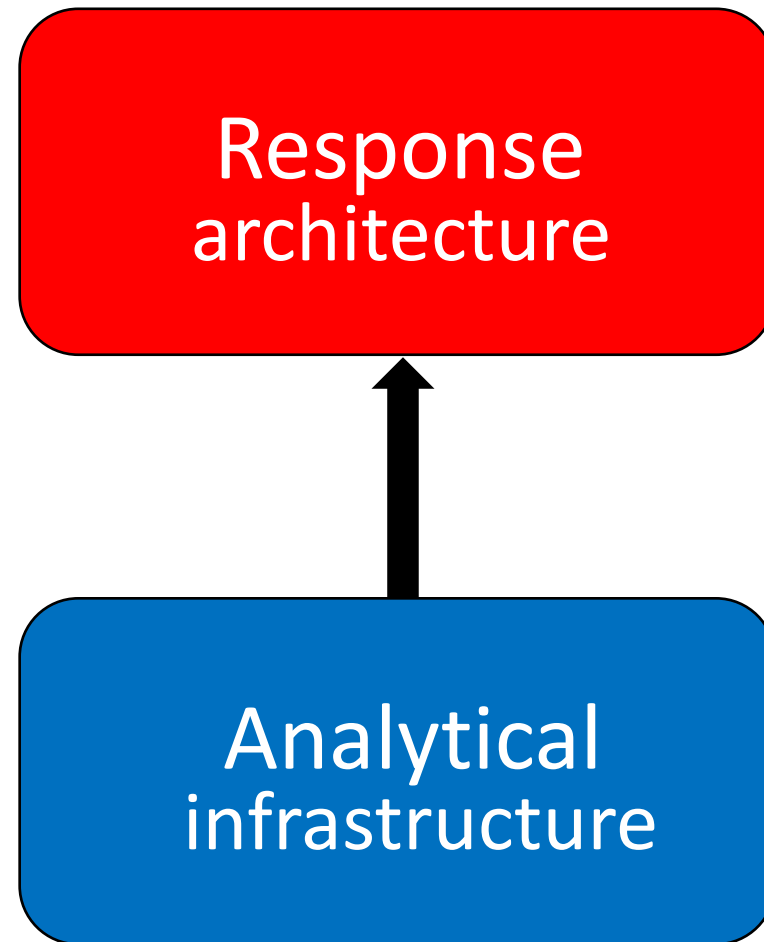Source: innovationtactics.com

Value creation

Types of Responses:
- Response to desire
- Curated offering
- Coach Behavior
- Automatic Execution

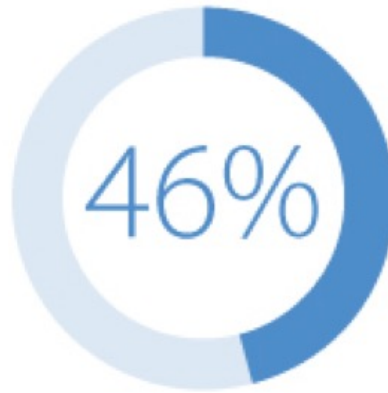Types of Analytics:
- Descriptive
- Predictive
- Prescriptive

Response
architecture

Analytical
infrastructure

Tailor-made personalized responses are the fairy dust!

TOP 3 SERVICE CHALLENGES
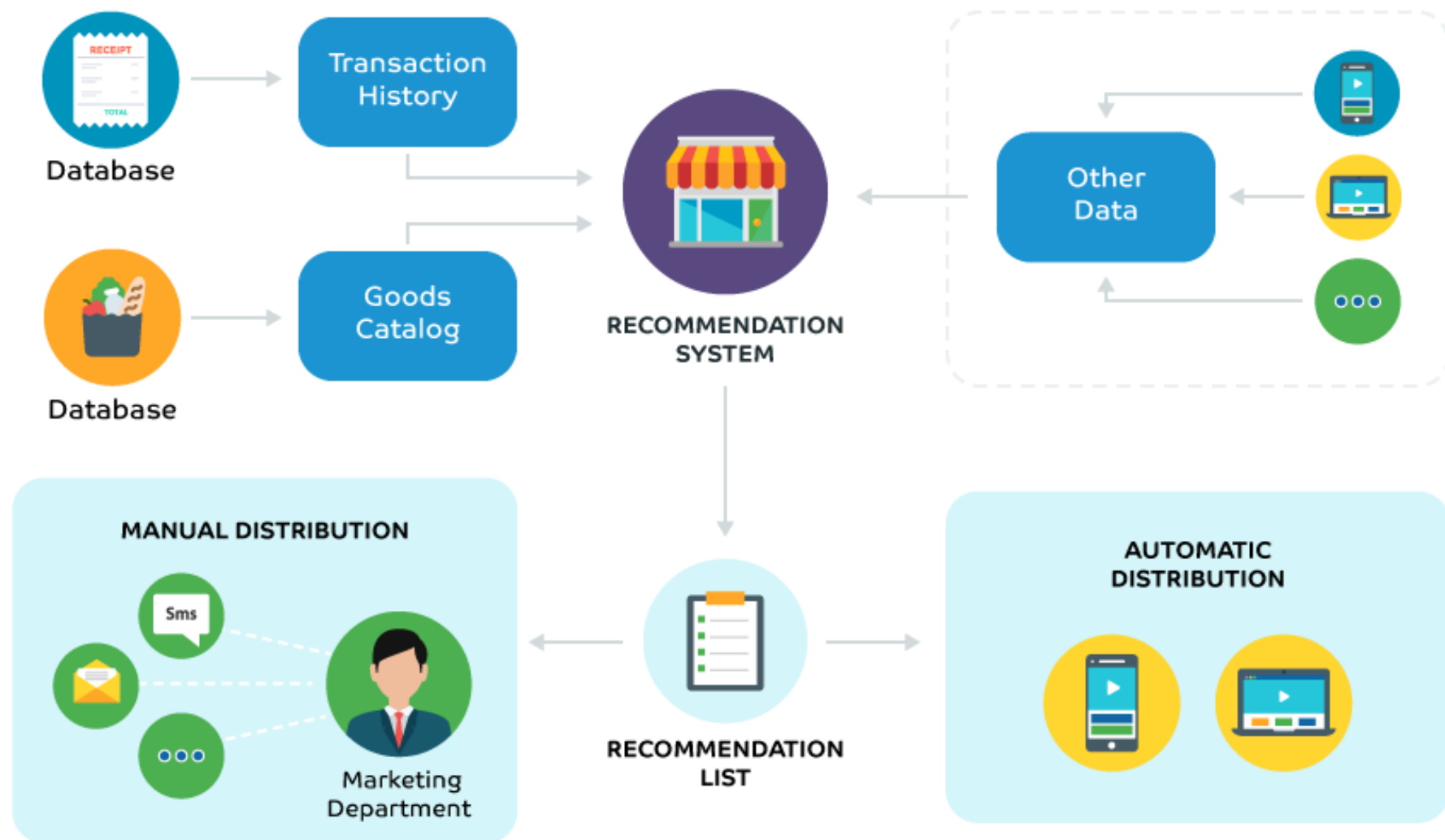
51%

Customers having to re-explain the issue

46%

Customers expending moderate to high effort to resolve an issue

40%

Customers failing to find answers on their own (self-service not available)

Responding to customer wants or desires

Database

Transaction History

Database

Goods Catalog

RECOMMENDATION SYSTEM

Other Data

MANUAL DISTRIBUTION

Sms

Marketing Department

RECOMMENDATION LIST

AUTOMATIC DISTRIBUTION

Curated offerings

Because you watched Bloodline

Because you watched Orange Is the New Black

Because you watched House of Cards

Curated offerings

Age

Income

Location

CUSTOMER
PROFILE

Turnover

Hobbies

Goals

Job title

Challenges
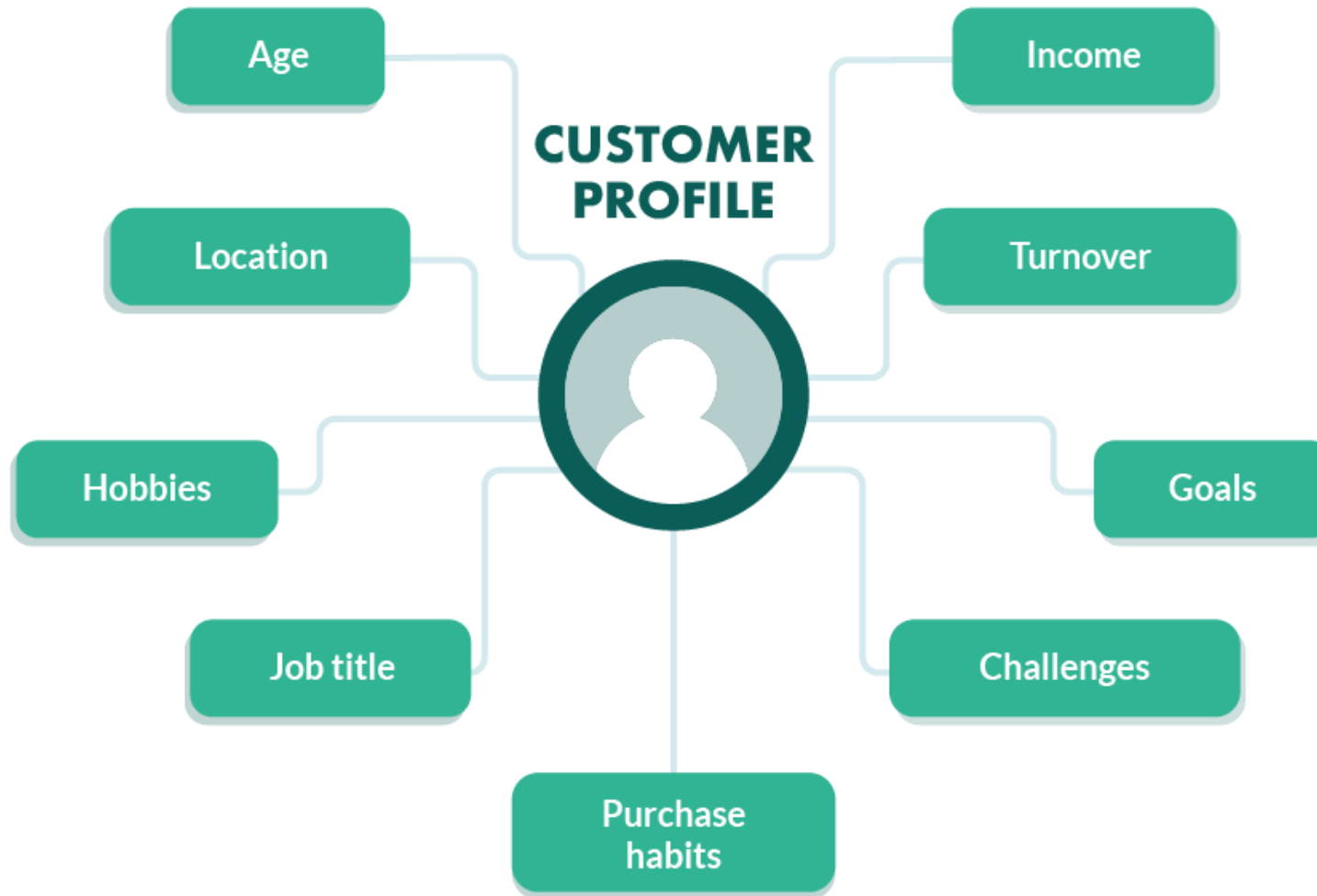
Purchase
habits

Coach Behaviour

🤔

Ethical?

Consumer Decision Making Process

How consumers behave before a purchase

01

NEED RECOGNITION

Understanding a problem and needing a solution.

INFORMATION SEARCH

Learning more about the products/services that fits the need.

02

03

ALTERNATIVE EVALUATION

Checking out other solutions and the competition.

PURCHASE DECISION

The consumer makes the purchase.

04

05

POST-PURCHASE BEHAVIOR

Customers turning into advocates for a brand.

Coach Behaviour

🤔
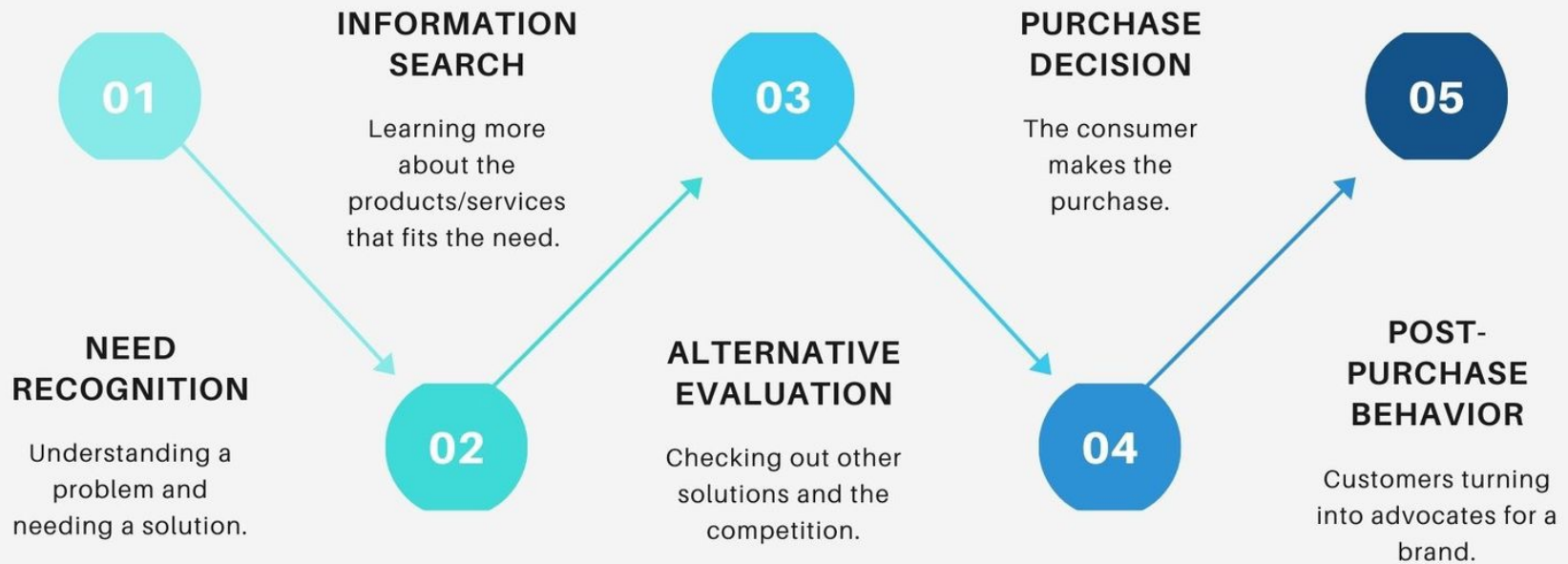
Ethical?

How can we "coach" them to make a purchase?

Automatic Execution

🤔

What could
go wrong?

BuyHive

The best product sourcing experts

BuyHive

ONE-SIDED MARKET

TWO-SIDED MARKET

What is the type of platform?
What is the intermediary doing/offering?
What value are they co-creating?

BuyHive

As the decision maker at BuyHive, what digital platforms can you use to collect data?
- What data?
- What platform?

How can you use big data to develop a good response architecture?
- Response to desire
- Curated offering
- Coach Behavior
- Automatic Execution

Value creation

Types of Responses:
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Types of Analytics:
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Response architecture

Analytical infrastructure
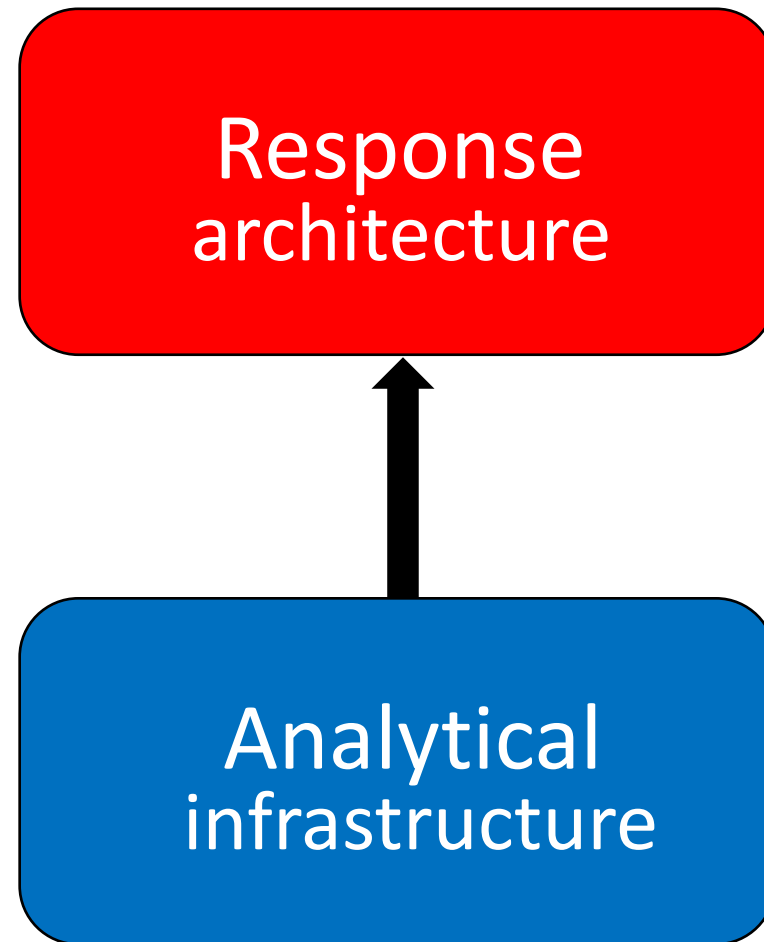
Tailor-made personalized responses are the fairy dust!

Analytics Infrastructure

	Tools used	Limitations	When to use
Descriptive Analytics — *What happened and why?*	› Data aggregation › Data mining	› Snapshot of the past › Limited ability to guide decisions	› When you want to summarize results for all/part of your business
Predictive Analytics — *What might happen?*	› Statistical models › Simulation	› Guess at the future › Helps inform low complexity decisions	› When you want to make an educated guess at likely results
Prescriptive Analytics — *What should we do?*	› Optimization models › Heuristics	› Most effective where you have more control over what is being modeled	• When you have important, complex or time-sensitive decisions to make

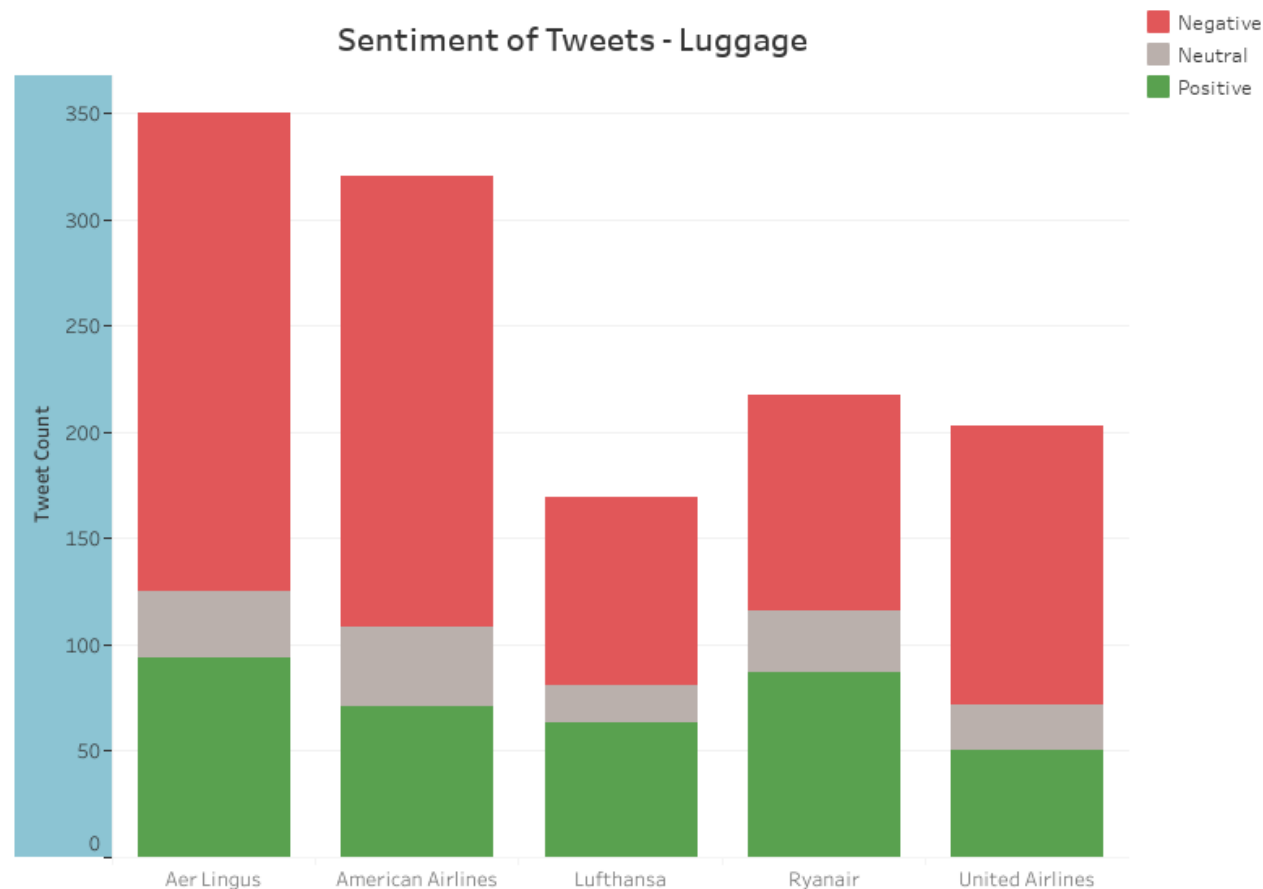Tailor-made personalized responses are the fairy dust!
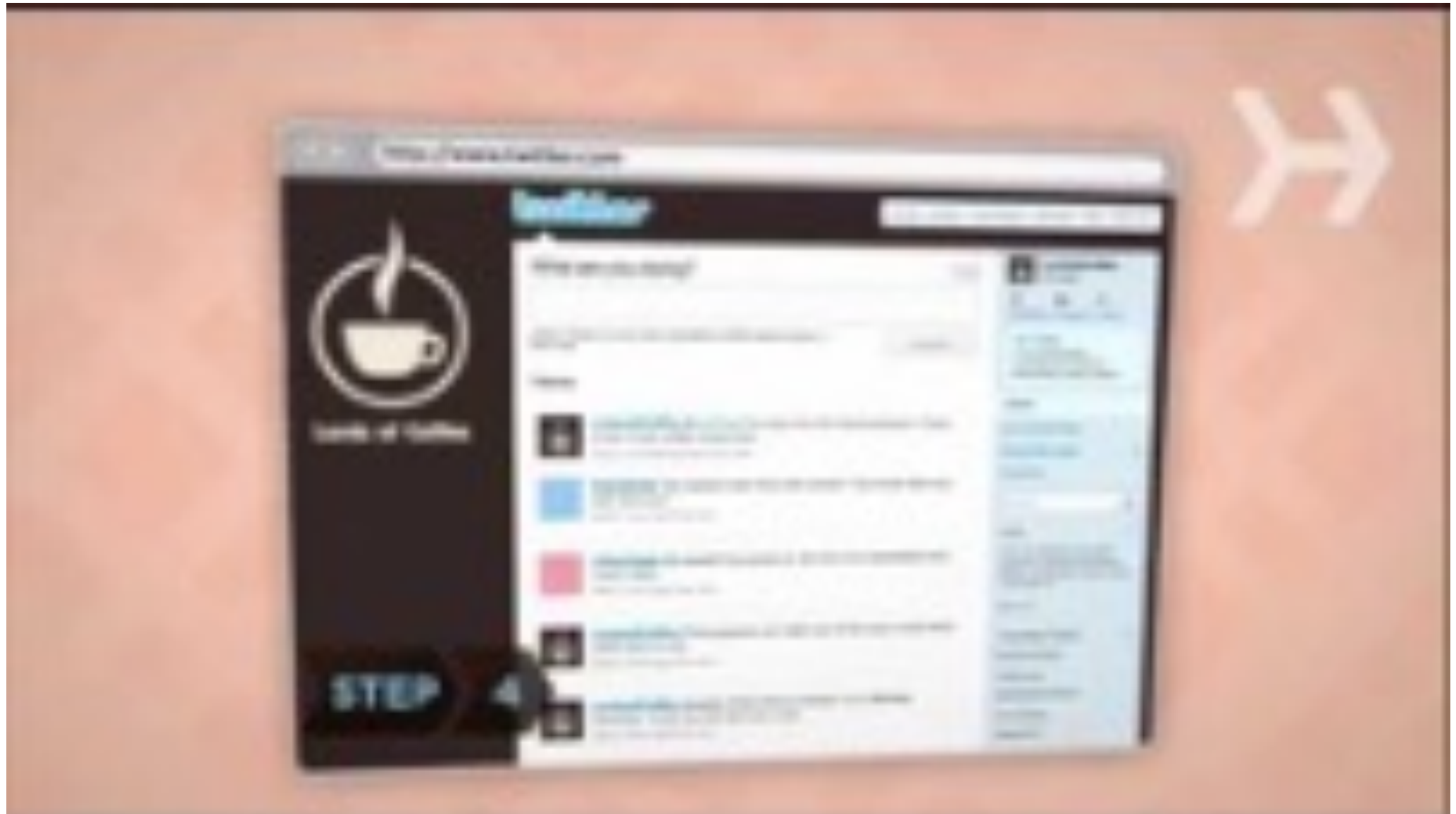
Descriptive Analytics: Sentiment Analysis
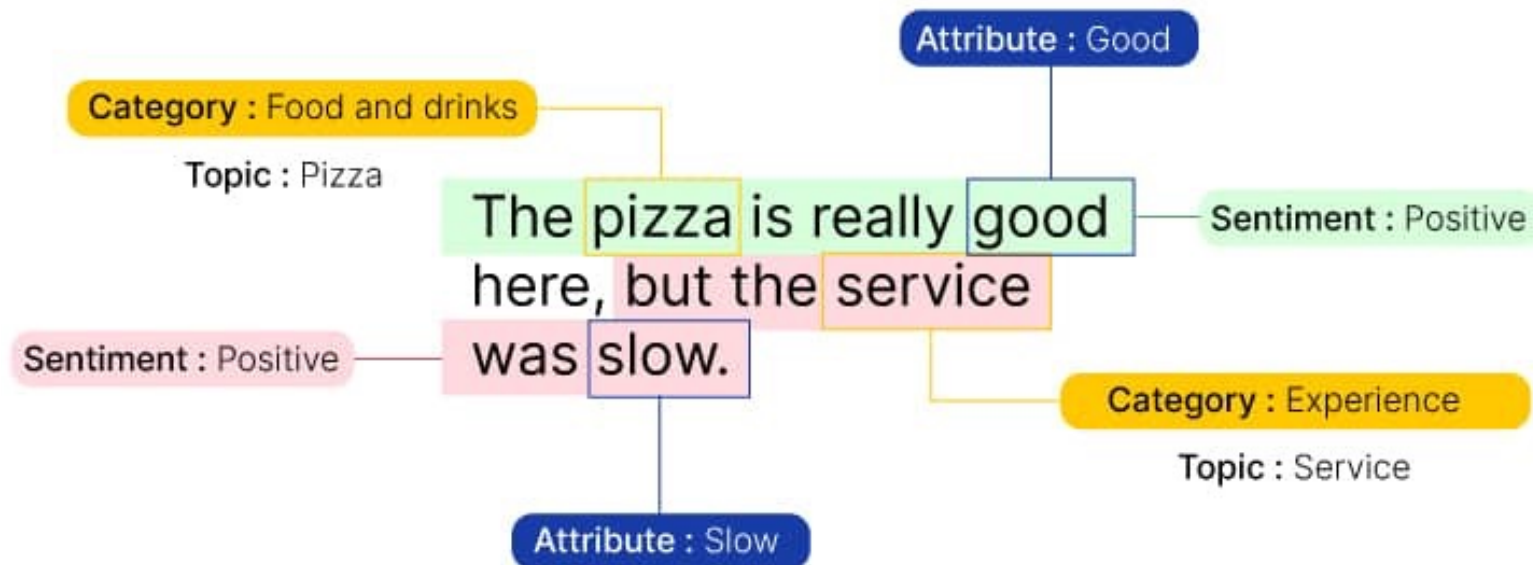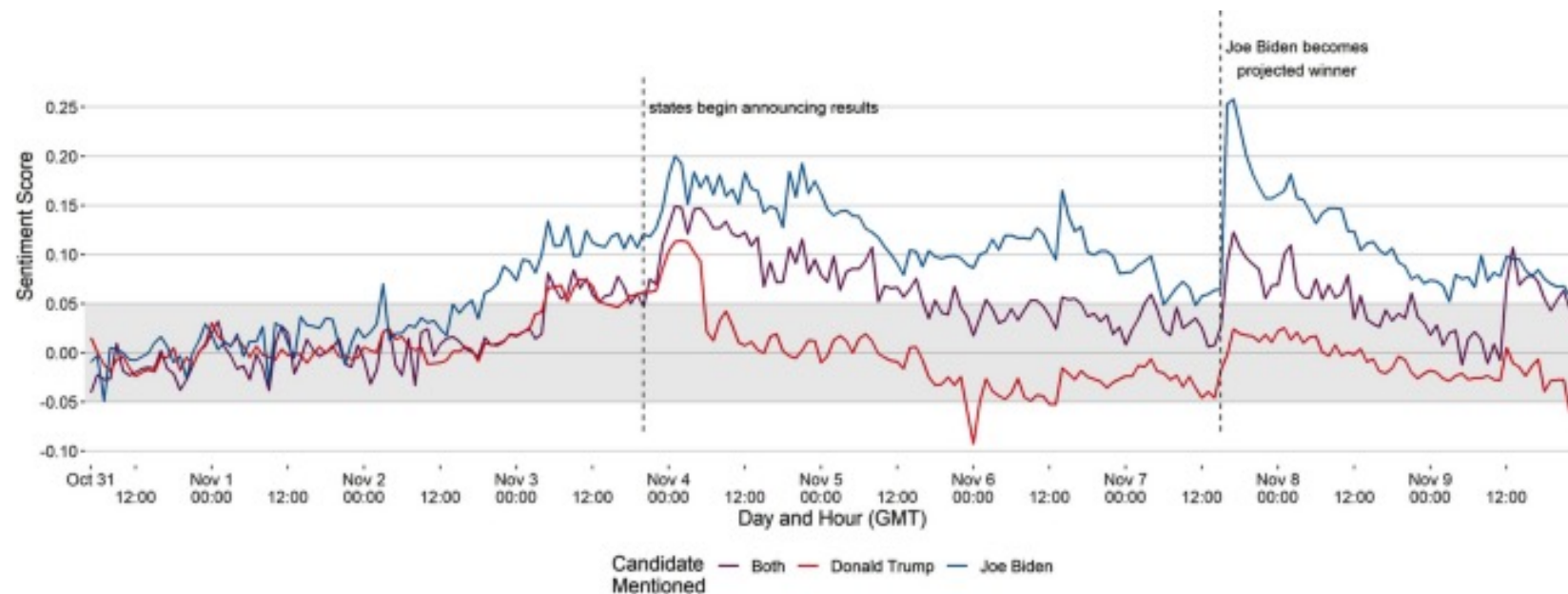
Descriptive Analytics: Sentiment Analysis

Descriptive Analytics: Sentiment Analysis

Sentiment of Tweets - Luggage

Legend:
- Negative (red)
- Neutral (grey)
- Positive (green)
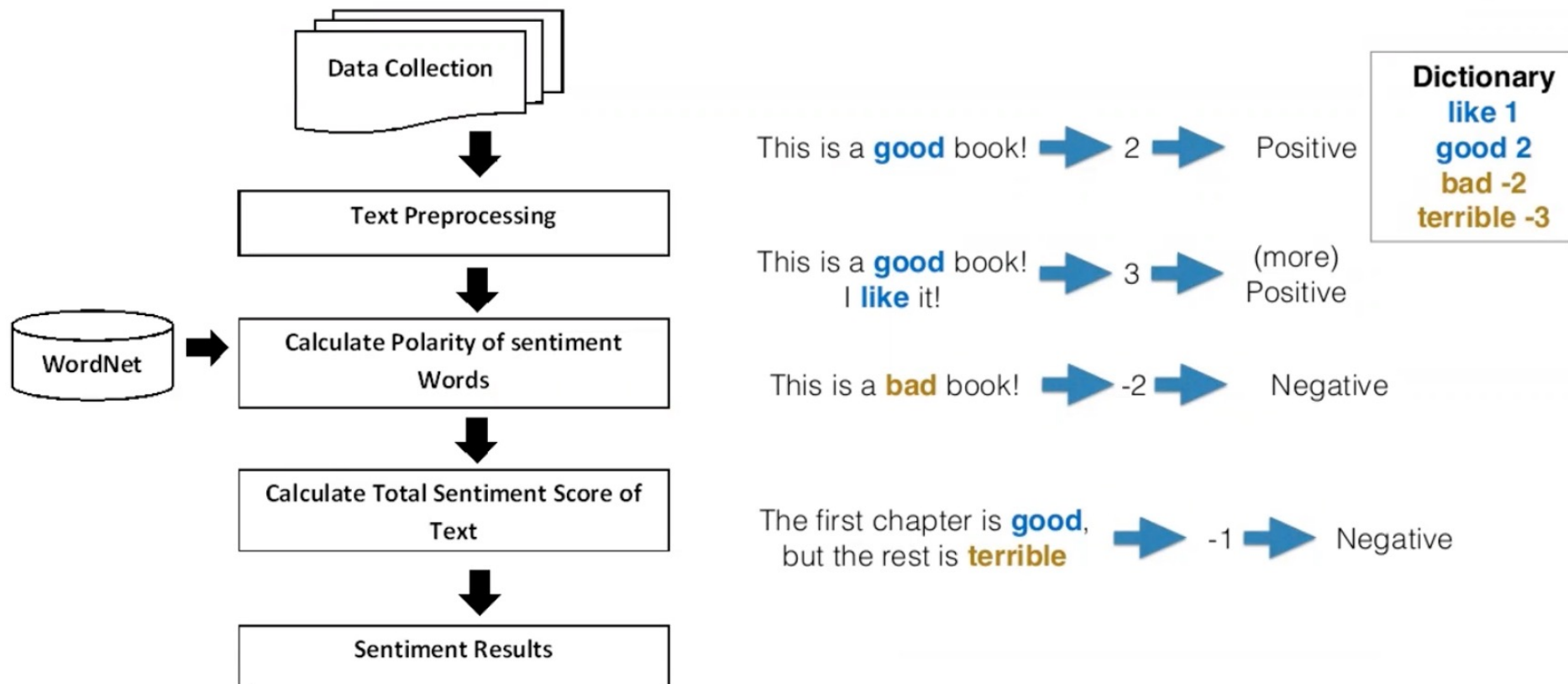
Twitter Case

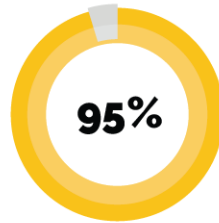# Discussion

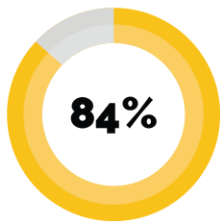|	geo	text	user	location	Subject
0	None	Co-founder Glenn Greenwald resigns from the 'free' Intercept after they censored his story about Joe Biden's monumental and…	Wakeupnowy		Joe Biden
1	None	A vote for Joe Biden is a vote for Puerto Rico. We must never forget Donald Trump's inactions led to the loss of over 3…	OkanaganLeigh		Joe Biden
2	None	Now that NBC has exposed the bogus Hunter Biden smears and discovered that a fake man named "Martin Aspen" was behind it…	jessicar1980681		Joe Biden
3	None	After campaigning in 2016 to lift up the 'forgotten man,' President Trump has completely lost sight of working people. I pr…	youarenotBert		Joe Biden
4	None	You know why most of the #HunterBiden stories never made much sense to me? Because Joe Biden was in the White House fro…	JesseSimonODay	Oswego, NY	Joe Biden
5	None	. has THREE Make America Great Again peaceful protests today.📍Waterford Town, MI: 1:00 p.m. (EST)📍Gre…	drewCor01177630		Joe Biden
6	None	After campaigning in 2016 to lift up the 'forgotten man,' President Trump has completely lost sight of working people. I pr…	LiReHirsch	Philadelphia	Joe Biden
7	None	A vote for Joe Biden is a vote for Puerto Rico. We must never forget Donald Trump's inactions led to the loss of over 3…	mrmrf8		Joe Biden

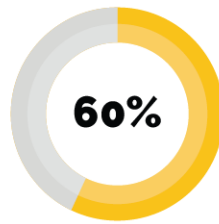# Discussion
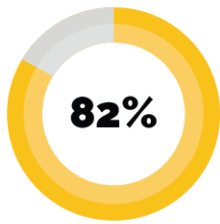
82%
Of US adults say they read online reviews before visiting a local business

84%
Of people trust online reviews as much as a personal recommendation

95%
Of people use the Internet to search for local businesses

60%
Of people say negative reviews make them not want to use a business.

THE SERIOUS IMPACT OF NEGATIVE REVIEWS AND WHAT TO DO ABOUT THEM.

Responding Quickly to Customer Complaints Makes People Willing to Pay More in the Future

A study of tweets to airlines shows that when a tweet is answered in five minutes or less, the customer will pay almost $20 more for a ticket on that airline in the future.
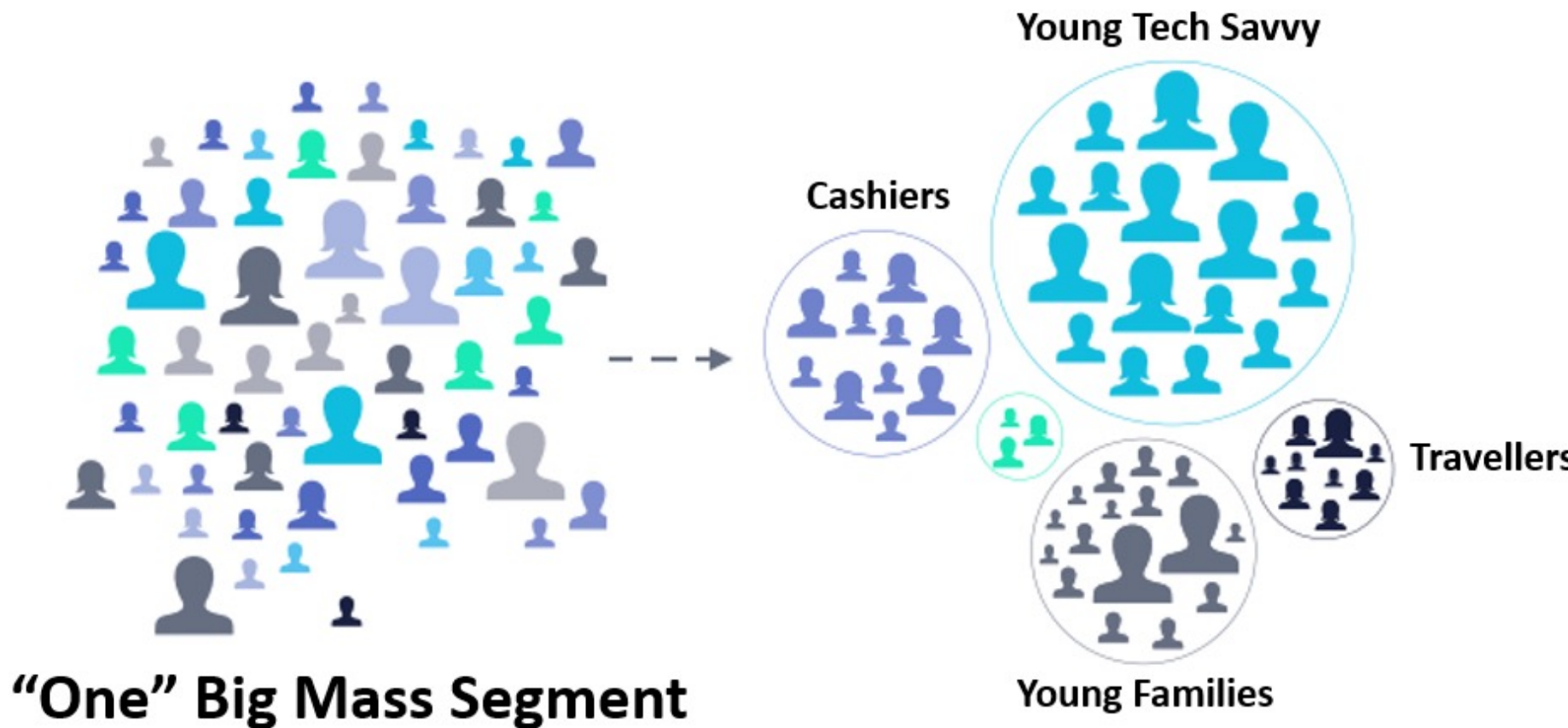
ADDITIONAL AMOUNT WILLING TO PAY ($U.S.)

RESPONSE TIME	Amount
60 MINS OR MORE	$2.33
21–59 MINS	3.19
6–20 MINS	8.53
5 MINS OR LESS	19.83
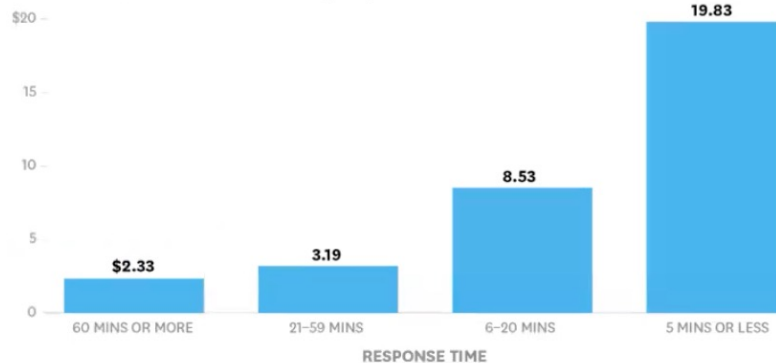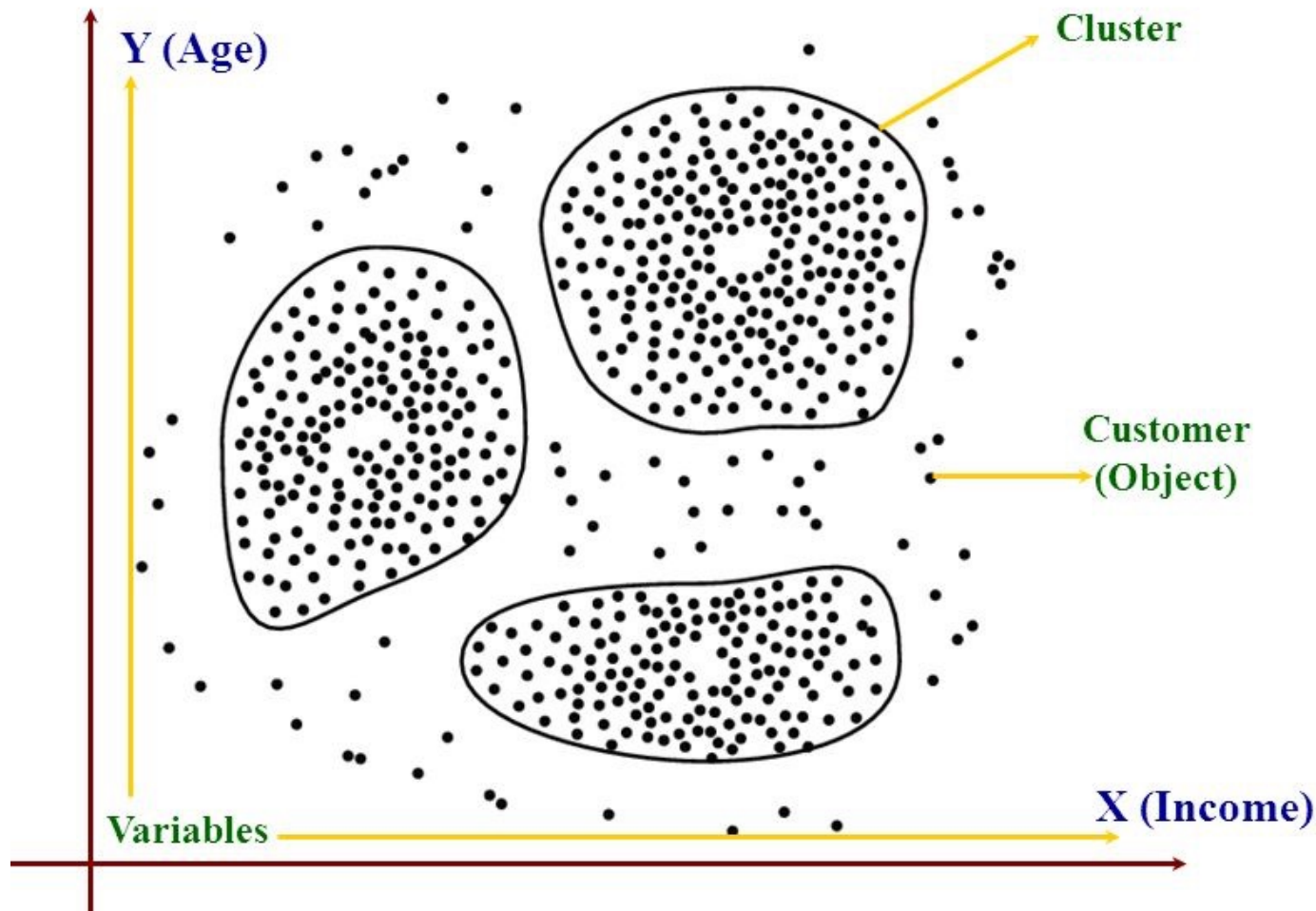
Descriptive Analytics: Cluster Analysis

Descriptive Analytics: Cluster Analysis

"One" Big Mass Segment → Cashiers, Young Tech Savvy, Young Families, Travellers
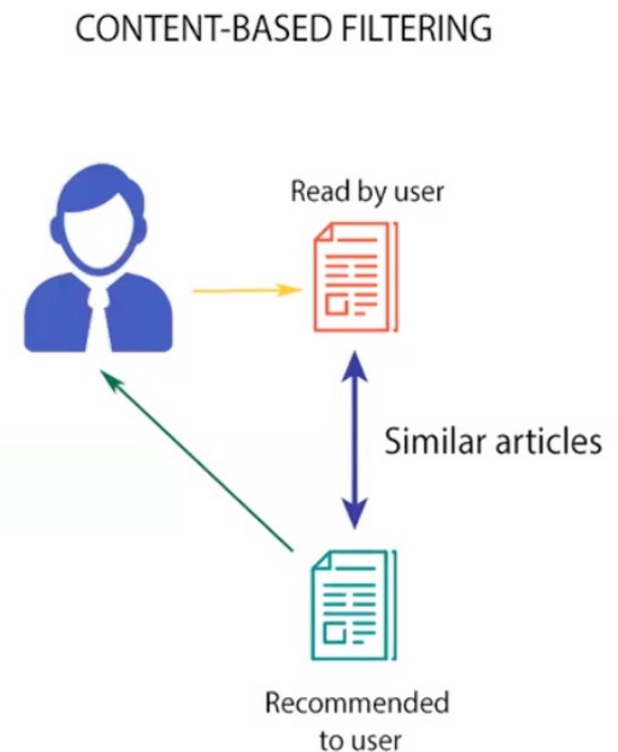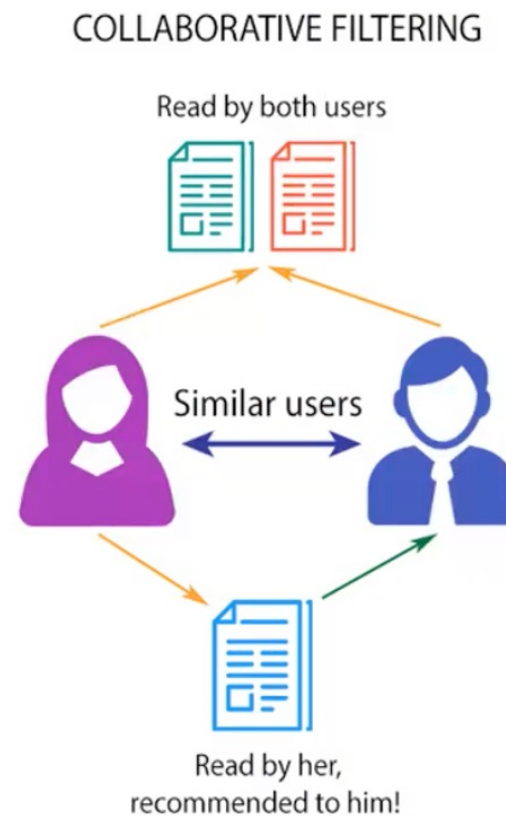
Descriptive Analytics: Cluster Analysis

- Collaborative filtering

- Content-based filtering
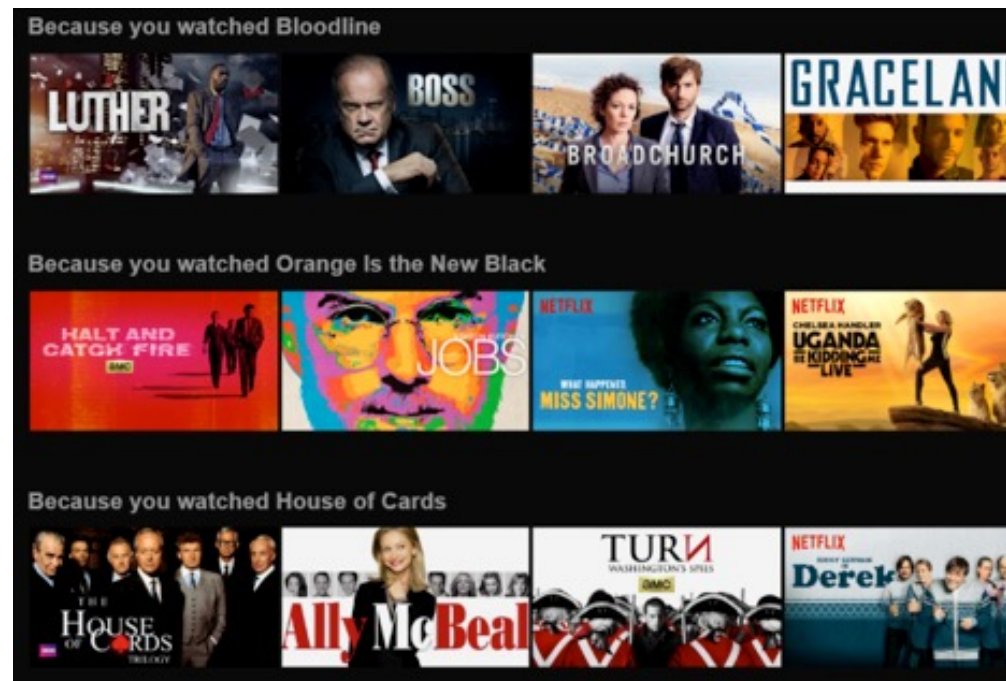
Netflix Recommendations

Netflix Recommendations

If you are the Product Manager at Netflix, how would you generate recommendations for customers?

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Thank you! Q&A?

BU7145

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