

Big Data Analytics

Lecture 2

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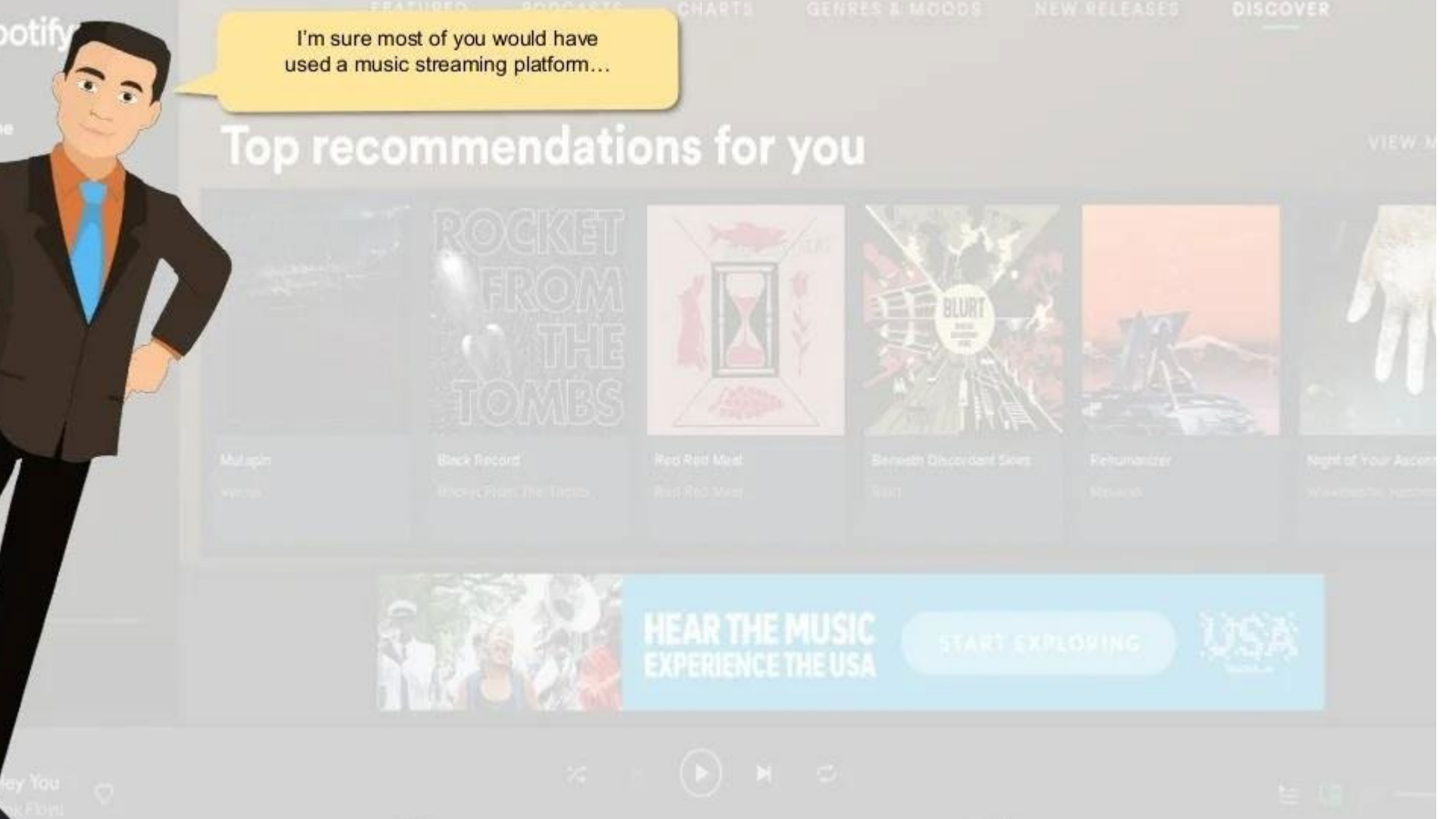
Why big data analytics?



What's in it for you?

- 1 Why big data analytics?
- 2 What is big data analytics?
- 3 Lifecycle of big data analytics
- 4 Types of big data analytics
- 5 Tools used in big data analytics
- 6 Big data application domains





I'm sure most of you would have used a music streaming platform...

Top recommendations for you

Mulatin

Various

Black Record

Black Record The Tapes

Red Red Meat

Red Red Meat

Beneath Discordant Skies

Blut

Rehumanizer

Rehumanizer

Night of Your Ascent

Whispering Willows

HEAR THE MUSIC
EXPERIENCE THE USA

START EXPLORING

USA
MUSIC

Play You
Pink Floyd





FEATURED

PODCASTS

CHARTS

GENRES & MOODS

NEW RELEASES

DISCOVER

....like Spotify!

Top recommendations for you



Mulapin
Various



Black Record
Black Record The Tombs



Red Red Mist
Blut Red Mist



Beneath Discordant Sails
Blurt



Rehumanizer
Mowgli



Night
White



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MUSIC



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PODCASTS

CHARTS

GENRES & MOODS

NEW RELEASES

DISCOVER

Spotify has nearly 96 million users

Top recommendations for you

Mulepin

Various

Black Record

Rocket From The Tombs

Red Red Meat

Red Red Meat

Beneath Discordant Skies

Blurt

Rehumanizer

Showercase

Night

Various



HEAR THE MUSIC
EXPERIENCE THE USA

START EXPLORING





Home

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PL

NE

X

User behavior includes songs played, repeatedly used playlists, likes, shares and search history, all of which represents the big data used by Spotify

Top recommendations for you

Mutapin
Wanna

Black Record
Black Record The Tracks

Red Red Meat
Red Red Meat

Beneath Discordant Skies
BLURT

Rehumanizer
Rehumanizer

Night
Night

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Experience



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NEW RELEASES

DISCOVER

Spotify analyzes this big data for suggesting songs to its users

Top recommendations for you

Mulapin
Wanna

Black Record
Black Record The Tracks

Red Red Meat
Red Red Meat

Beneath Discordant Skies
Blurt

Rehumanizer
Mowat

Night
Wanna



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PLAYLIST](#)[Daily Mix 1
PLAYLIST](#)[Install App](#)

Top recommendations for you



Mulapin
Verme



Black Record
Rocket From The Tombs



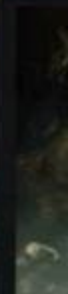
Red Red Meat
Red Red Meat



Beneath Discordant Skies
Blurt



Rehumanizer
Meserati



Night
Wrek



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NEW RELEASES

DISCOVER



Home



Recommendation systems are data filtering tools. They collect data and then filter them using algorithms

Top recommendations for you



Mulapin

Vernon



Black Record

Black Record The Thriller



Red Red Meat

Red Red Meat



Beneath Discordant Skies

SEPT



Rehumanizer

Shawn



Night

White



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USA
Experience



Home



Library

Discover

Playlists

Radio

Podcasts

Settings

Help

Log out

Account

Privacy

Feedback

The recommendation systems accurately predict what users would like to listen to next with the help of big data analytics

Top recommendations for you



Mulapin
Various



Black Record
Black Record Trio



Red Red Meat
Red Red Meat



Beneath Discordant Skies
Blurt



Rehumanizer
Rehumanizer



Night of Your Ascension
Wavelength

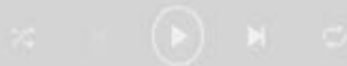


HEAR THE MUSIC
EXPERIENCE THE USA

START EXPLORING



Hey You
Pink Floyd



0:00 4:30



FEATURED

PODCASTS

CHARTS

GENRES & MOODS

NEW RELEASES

DISCOVER

Using big data analytics, Spotify keeps its users engaged and by doing so, the users use the application more

Top recommendations for you



Mulapin

Wanna



Black Record

Black Record This Techno



Red Red Meat

Red Red Meat



Beneath Discordant Skies

Start



Rehumanizer

Shower



Night

White



HEAR THE MUSIC
EXPERIENCE THE USA

START EXPLORING

USA
MUSIC

What is big data analytics?



What is big data?

Massive amount of data which cannot be stored, processed and analyzed using traditional tools is known as big data



Big data

What is big data?

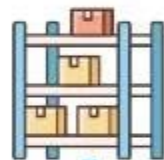
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Big data



Storing



Processing



Analyzing



Storing, processing and analyzing big data became difficult using traditional methods

What is big data analytics?

Big data analytics is a process to extract meaningful insights from big data such as hidden patterns, unknown correlations, market trends and customer preferences

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Big data analytics is used for risk management

Big data analytics

What is big data analytics?



Banco de Oro, a Philippine banking company uses big data analytics



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Big data analytics is used for risk management

Big data analytics

Big data analytics is used for product development and innovations

What is big data analytics?



Banco de Oro, a Philippine banking company uses big data analytics



Identifying fraudulent activities and discrepancies is easier using big data analytics. Thus the organization was able to narrow down the list of suspects using big data analytics

What is big data analytics?



Rolls-Royce manufactures massive jet engines.
These engines are used by airlines and armed forces
across the world



Rolls-Royce®



What is big data analytics?



Rolls-Royce manufactures massive jet engines. These engines are used by airlines and armed forces across the world



Rolls-Royce®



The company uses big data analytics to analyze how good the engine design is and if there has to be any more improvement

Big data analytics is used here in designing a product of higher quality

What is big data analytics?

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Big data analytics

Big data analytics helps in quicker and better decision making in organizations

What is big data analytics?



Starbucks uses big data analytics for important decisions. For example, big data analytics is used to decide if a particular location would be suitable for a new outlet or not



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The analysis is done based on factors such as population demographics, accessibility of the location, competition in the vicinity, economic factors, parking adequacy and so on

The business grows if the right location is chosen wisely by considering the above parameters

What is big data analytics?

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Big data analytics is used for product development and innovations

Big data analytics

Big data analytics is used to improve customer experience

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What is big data analytics?



Delta airline uses analysis to improve customer experiences



What is big data analytics?



Delta airline uses analysis to improve customer experiences



They monitor tweets to find out their customers' experience regarding the journey, delays and so on

Airline identifies negative tweets and does the needful by upgrading the customer's ticket for the next journey if it is found out to be the airline's fault.

This helps the airline build good customer relations

Lifecycle of big data analytics

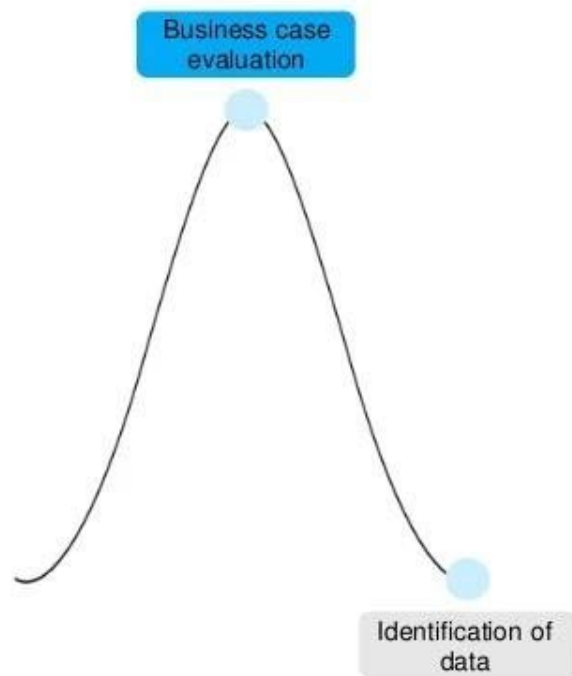


Lifecycle of big data analytics



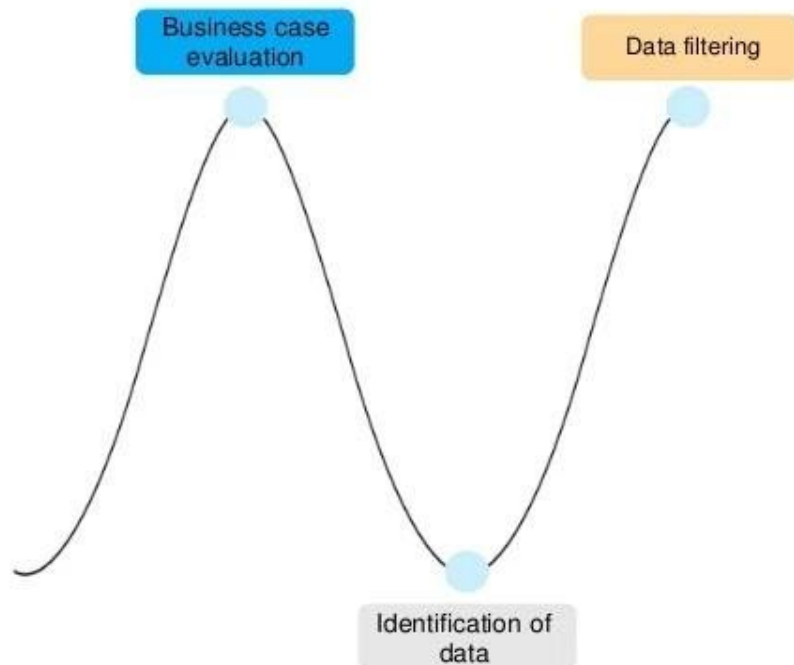
Big data analytics lifecycle begins with a **business case** which defines the reason and goal behind the analysis

Lifecycle of big data analytics



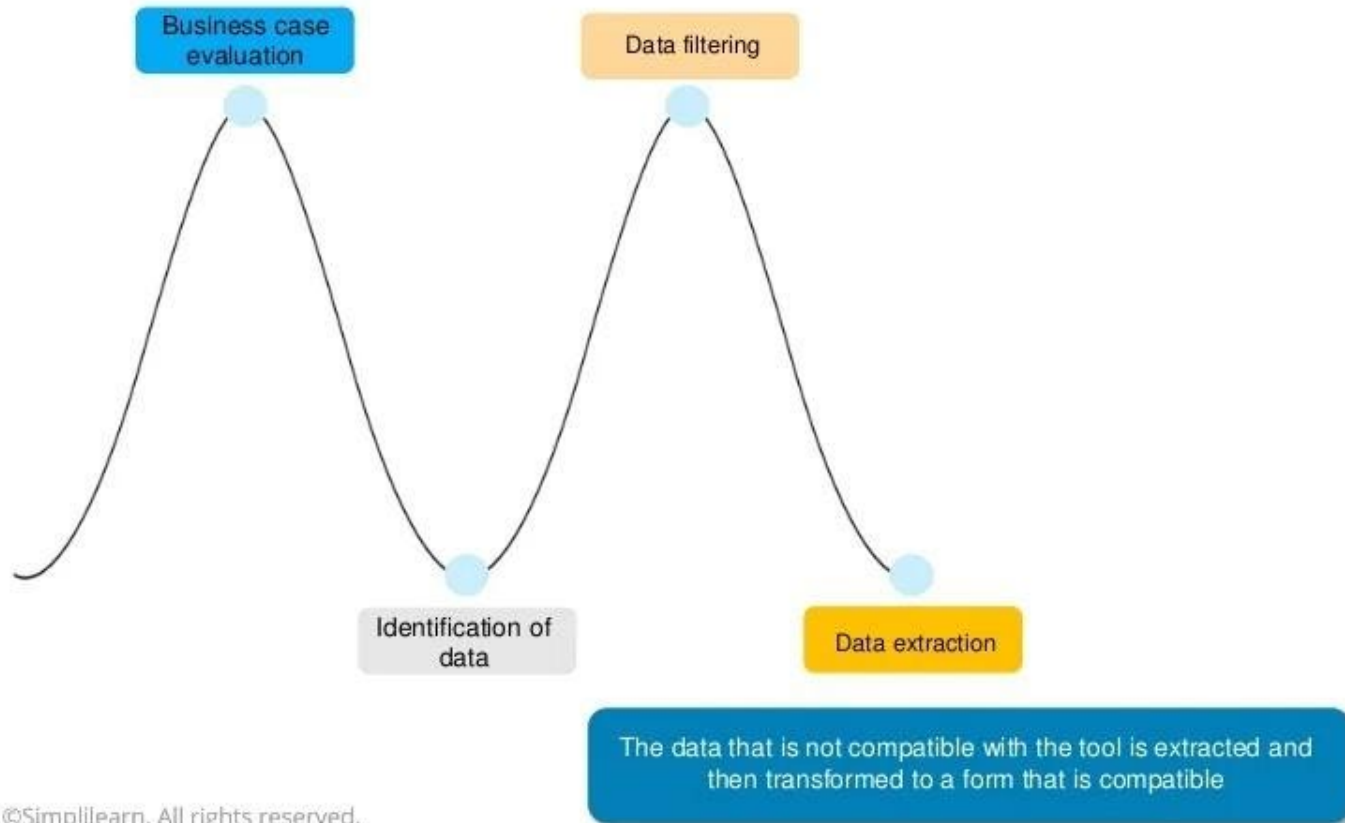
A broad variety of data sources are identified

Lifecycle of big data analytics

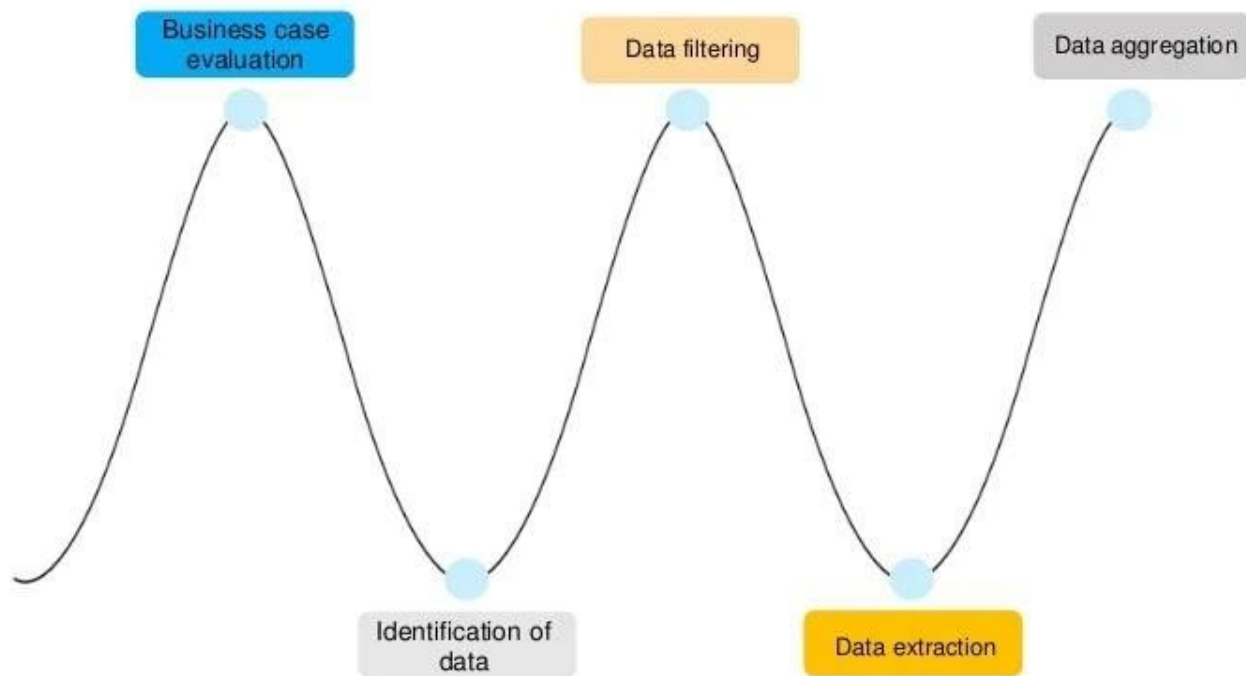


All the identified data from the previous stage is filtered here to remove the corrupt data

Lifecycle of big data analytics

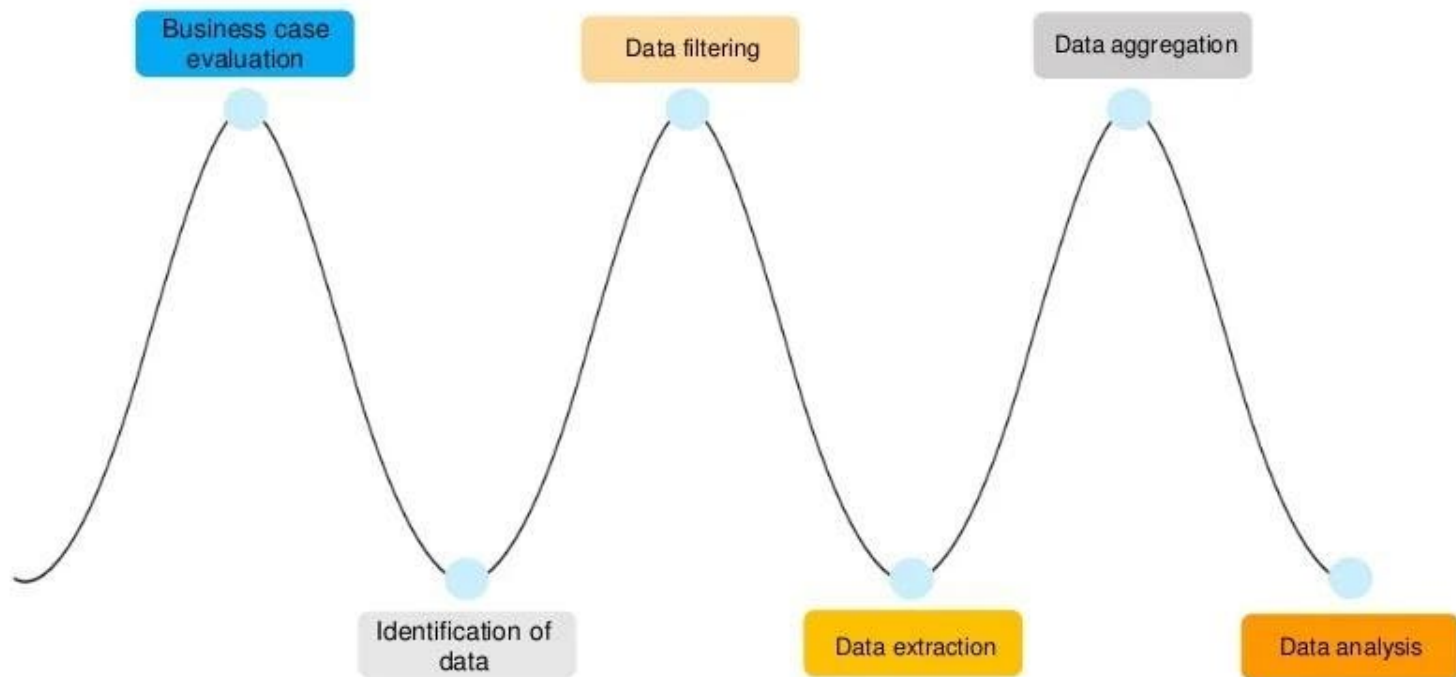


Lifecycle of big data analytics



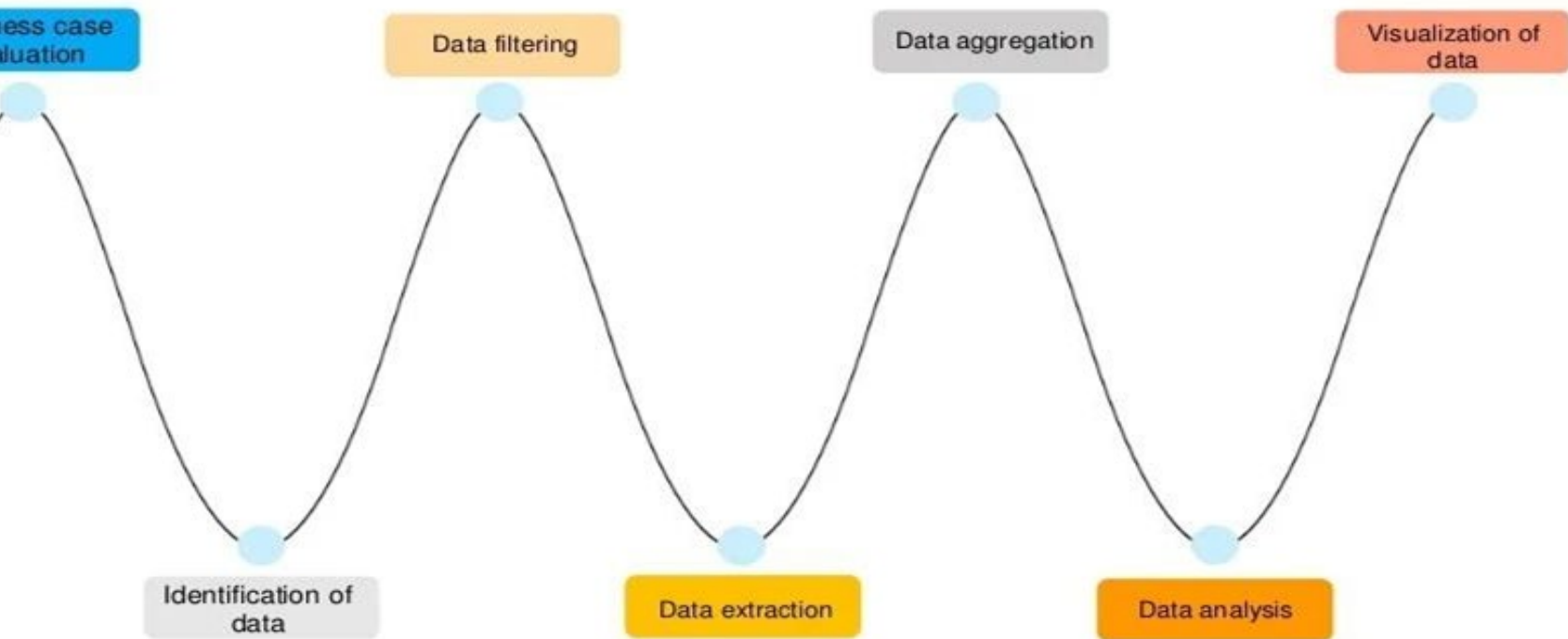
In the **data aggregation** stage, data with the same fields across different datasets are integrated

Lifecycle of big data analytics



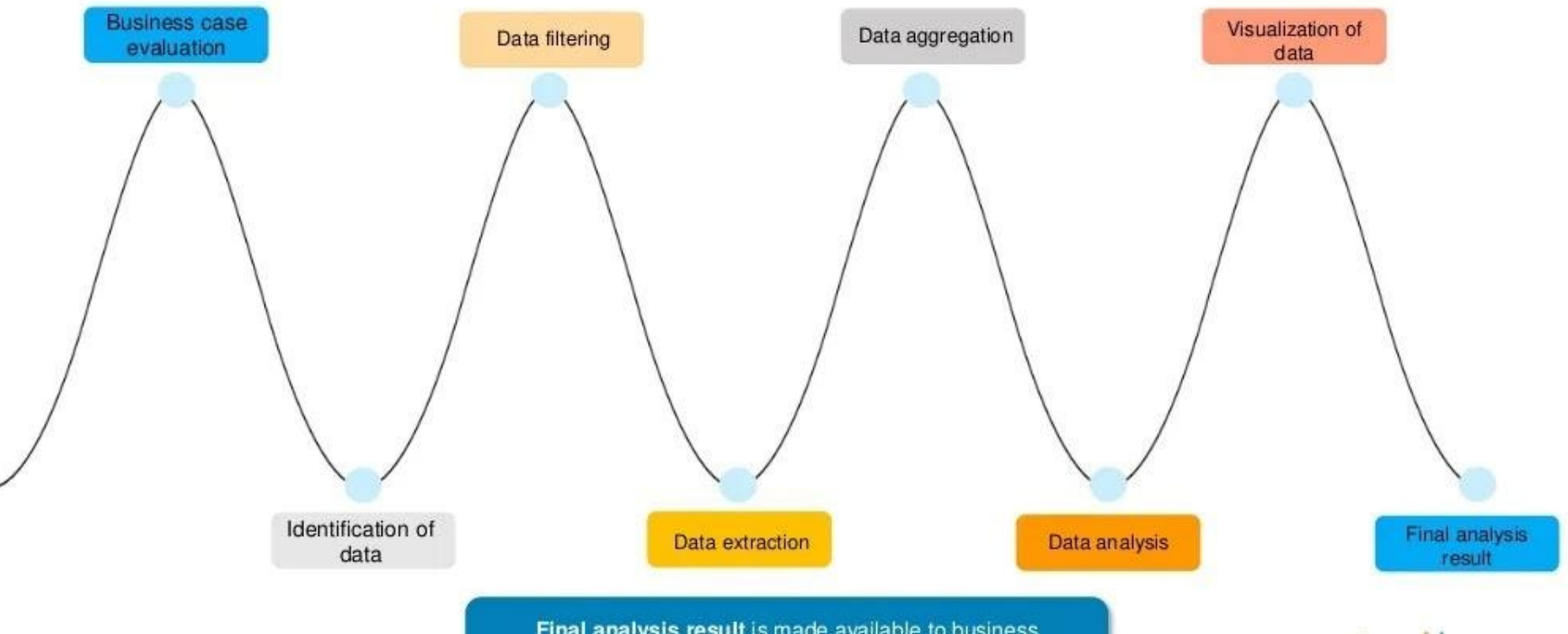
This is the process of evaluating data using analytical and statistical tools to discover useful information

cycle of big data analytics



Visualization of data is done by graphically communicating the analysis results. Tools like Tableau, PowerBI and QlikView are

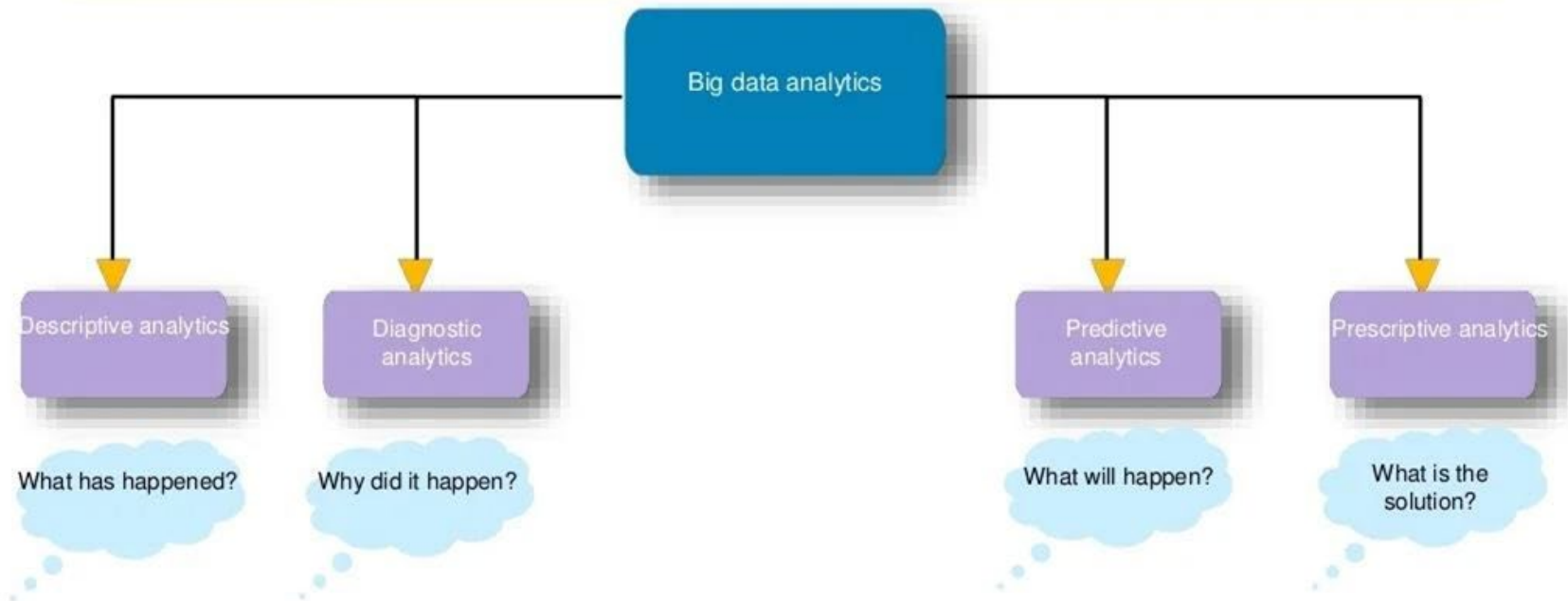
Lifecycle of big data analytics



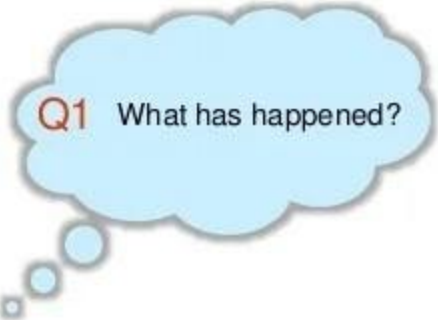
Types of big data analytics



Types of big data analytics



Types of big data analytics



Q1 What has happened?

Descriptive analytics

It summarizes past data into a form that is interpretable by humans

Types of big data analytics

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The Dow Chemical Company analyzed its past data to increase facility utilization across its office and lab space

Using descriptive analytics, Dow was able to identify under-utilized space. This space consolidation helped the company save nearly USD 4 million annually

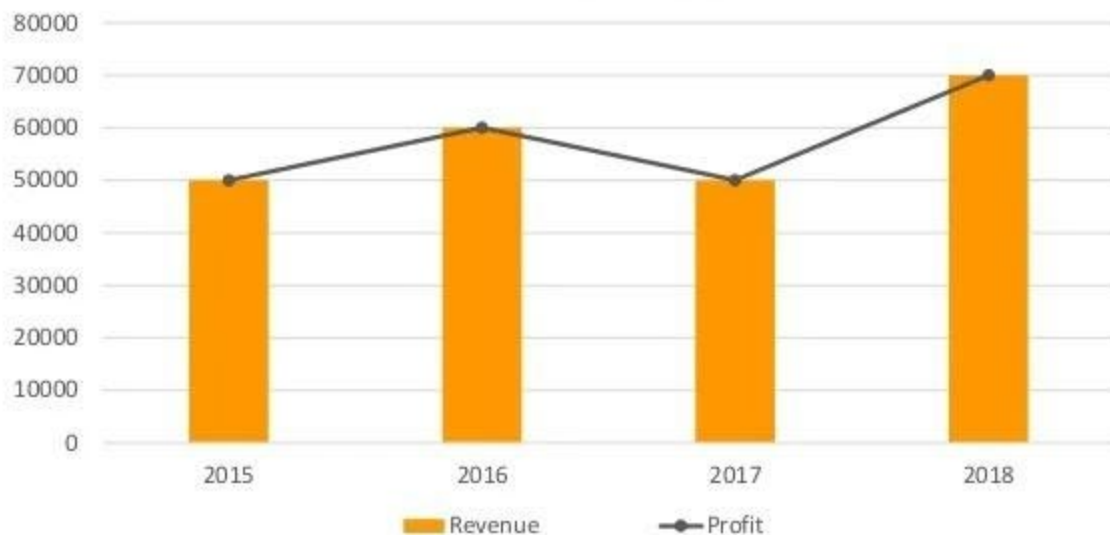
Types of big data analytics

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A company's profit graph



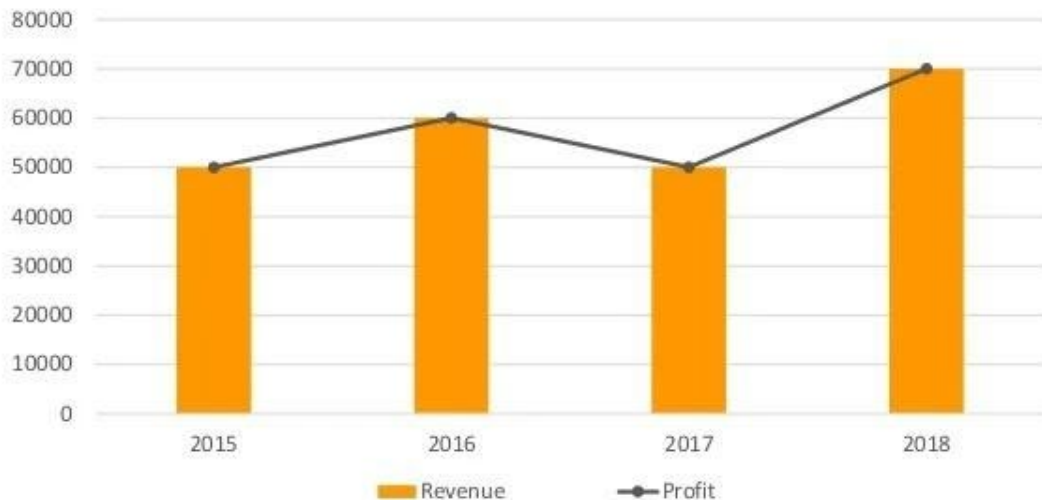
Types of big data analytics

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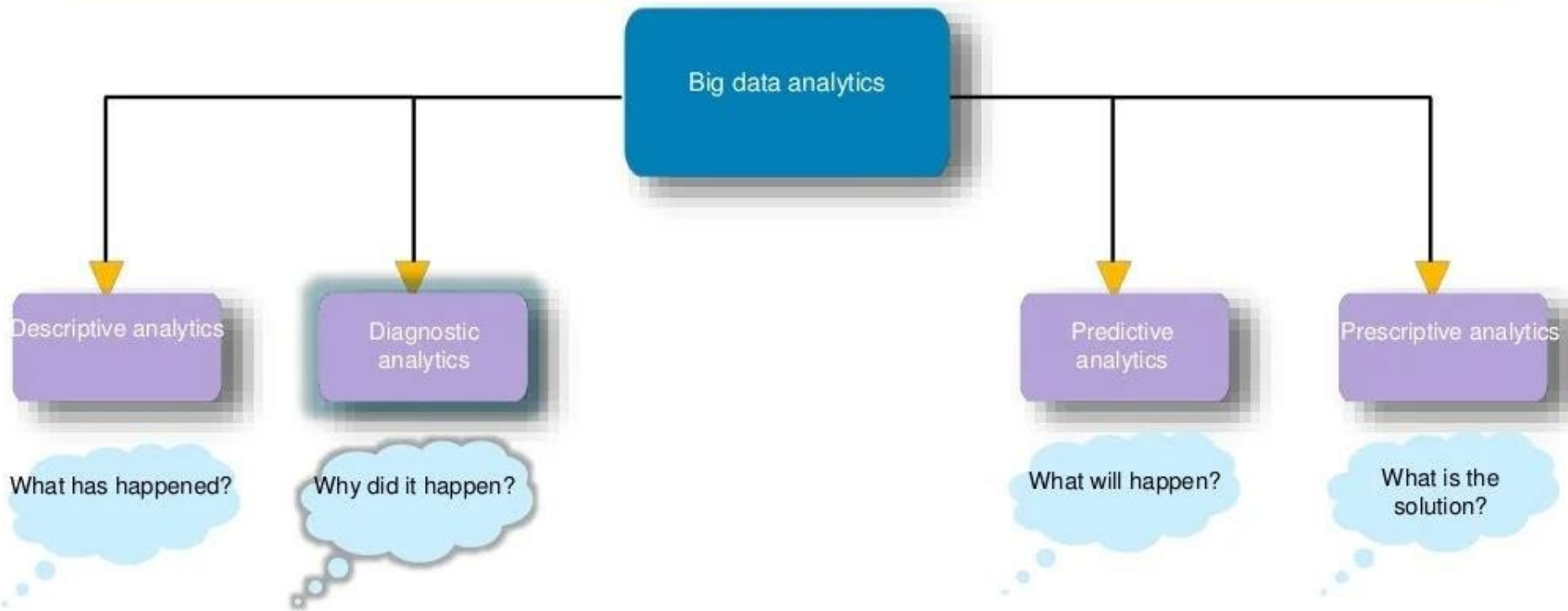
This analytics helps in creating reports like company's revenue, profit, sales and so on



Tabulation of social media metrics like Facebook likes and tweets are done using descriptive analytics



Types of big data analytics




Types of big data analytics

Diagnostic analytics

This analysis is done to understand why a problem has occurred. It looks into the cause of a problem

Types of big data analytics



Q2 Why did it happen?

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Types of big data analytics

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Organizations go for diagnostic analytics as it gives an in-depth insight into a particular problem



Types of big data analytics

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Organizations go for diagnostic analytics as it gives an in-depth insight into a particular problem



Query tool is one of the tools used for diagnostic analysis. InetSoft's BI query tool is an example

Types of big data analytics

Diagnostic analytics

An ecommerce company's report shows that their sales have reduced although customers are adding products to the cart



Types of big data analytics

Diagnostic analytics

Why did we make fewer online sales although we had good marketing?

An ecommerce company's report shows that their sales have reduced although customers are adding products to the cart



Types of big data analytics

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A lot of things could have gone wrong :

- The form didn't load correctly
- The shipping fee was too high
- Not enough payment options available



Types of big data analytics

Diagnostic analytics

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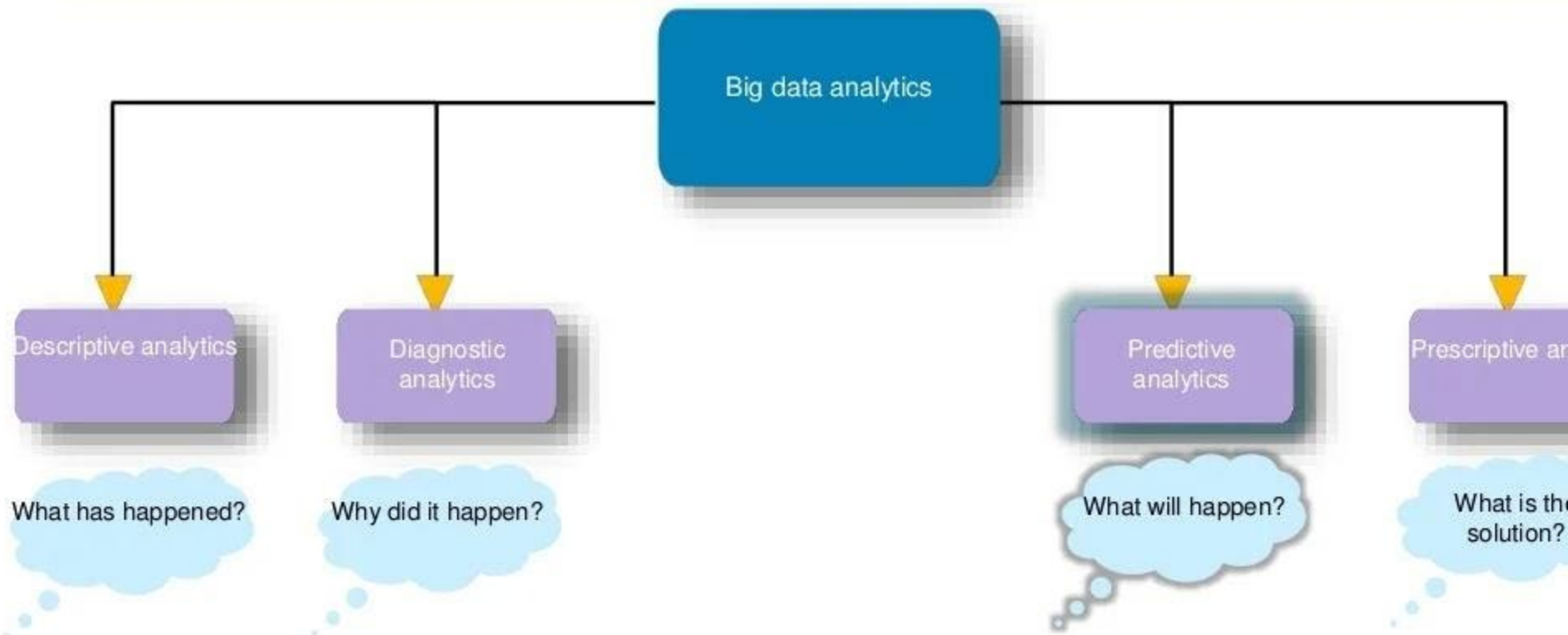
- The form didn't load correctly
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Using diagnostic analytics, we can find out the reason why this happened



Types of big data analytics



Types of big data analytics



Q3 What will happen?

Predictive analytics

Looks into the historical and present data to make predictions of the future

Types of big data analytics

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This type of analytics uses data mining, artificial intelligence and machine learning to analyze current data to make predictions about future

Types of big data analytics

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It works on predicting the customer trends, market trends and so on. This analysis works on probability



Types of big data analytics

Q3 What will happen?

Predictive analytics

Looks into the historical and present data to make predictions of the future

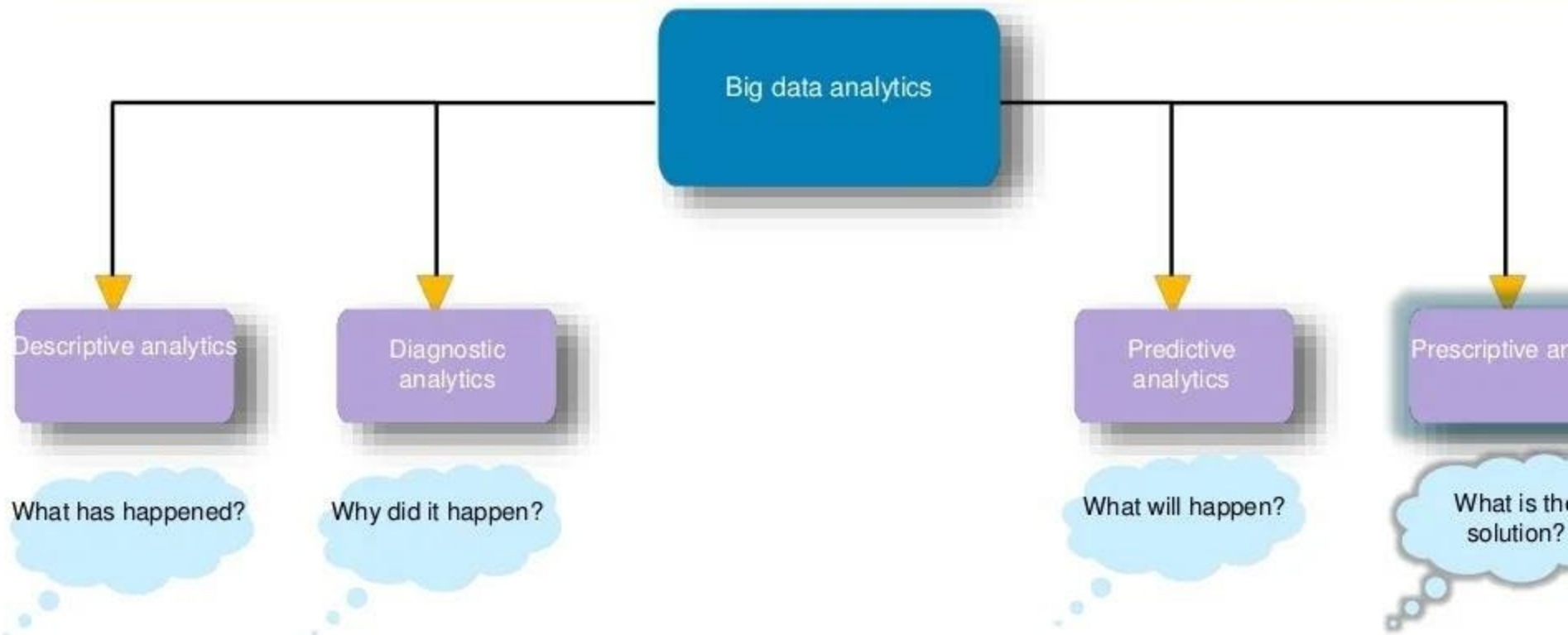
PayPal



Paypal determines what kind of precautions they have to take to protect their clients against fraudulent transactions

Using predictive analytics, the company uses all the historical payment data, the user behavior data and builds an algorithm which predicts fraudulent activities

Types of big data analytics



Types of big data analytics



Q4 What is the solution?

Prescriptive analytics

This type of analytics prescribes the solution to a particular problem

Types of big data analytics

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Prescriptive analytics works with both descriptive and predictive analytics

Most of the times prescriptive analytics relies on artificial intelligence and machine learning



Types of big data analytics

Q4 What is the solution?

Prescriptive analytics

This type of analytics prescribes the solution to a particular problem

Prescriptive analytics works with both descriptive and predictive analytics

Most of the times prescriptive analytics relies on artificial intelligence and machine learning



Business rules, algorithms, computational modelling procedures are used in prescriptive analytics

Types of big data analytics



Q4 What is the solution?

Prescriptive analytics

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Types of big data analytics

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Prescriptive analytics can be used to maximize an airline's profit



Types of big data analytics

Q4 What is the solution?

Prescriptive analytics

This type of analytics prescribes the solution to a particular problem

Prescriptive analytics can be used to maximize an airline's profit



This analytics is used to build an algorithm that will automatically adjust the flight fares based on numerous factors, including customer demand, weather, destination, holiday seasons and oil prices

Tools used in big data analytics



Tools used in big data analytics




Tools used in big data analytics



Hadoop helps in storing and analyzing big data

Tools used in big data analytics



 **mongoDB.**

MongoDB is used on datasets that change frequently

Tools used in big data analytics



Talend is a tool used for data integration and management

Tools used in big data analytics



It is a distributed database that is used for handling chunks of data

Tools used in big data analytics



Spark

It is used for real time processing and analyzing large amount of data

Tools used in big data analytics



It is an open source real time computational system

Tools used in big data analytics



kafka

It is a distributed streaming platform that is used for fault tolerant storage

A futuristic laptop is shown from a low angle, displaying a variety of data visualizations. The screen features a bar chart at the top, a line graph with a red trend line in the middle, and a circular progress indicator on the right. The background is a dark blue grid with glowing lines and dots, creating a high-tech, digital atmosphere. The laptop is light blue and has a white keyboard. The overall image is a conceptual representation of data analysis and technology.

Big data application domains



Ecommerce



Predicting customer trends, optimizing price are few of the ways e-commerce uses big data analytics

Big data application domains



Marketing



Ecommerce



Big data analytics helps in driving high ROI marketing campaigns which result in better sales

Big data application domains



Education



Marketing



Ecommerce



New courses are developed based on the market requirement using big data analytics

Big data application domains



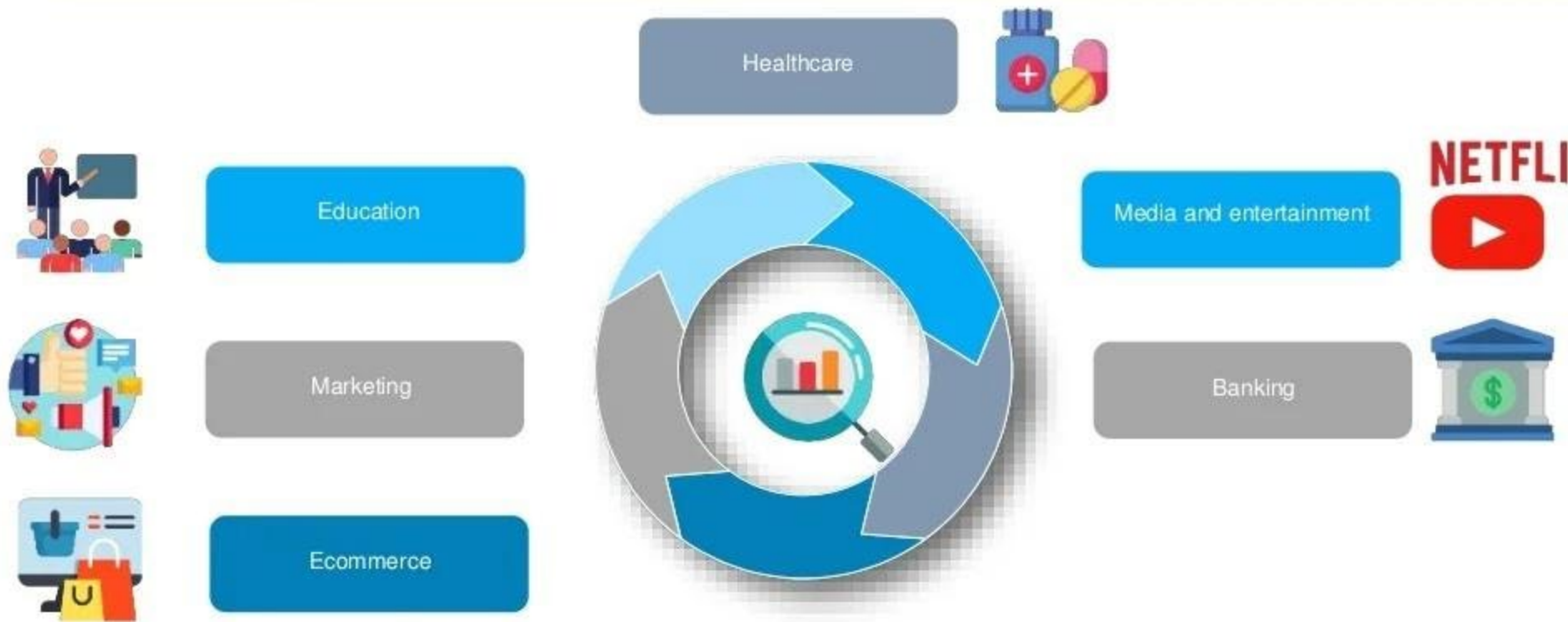
With the help of a patient's medical history, big data analytics is used to predict how likely they are to have health issues

Big data application domains



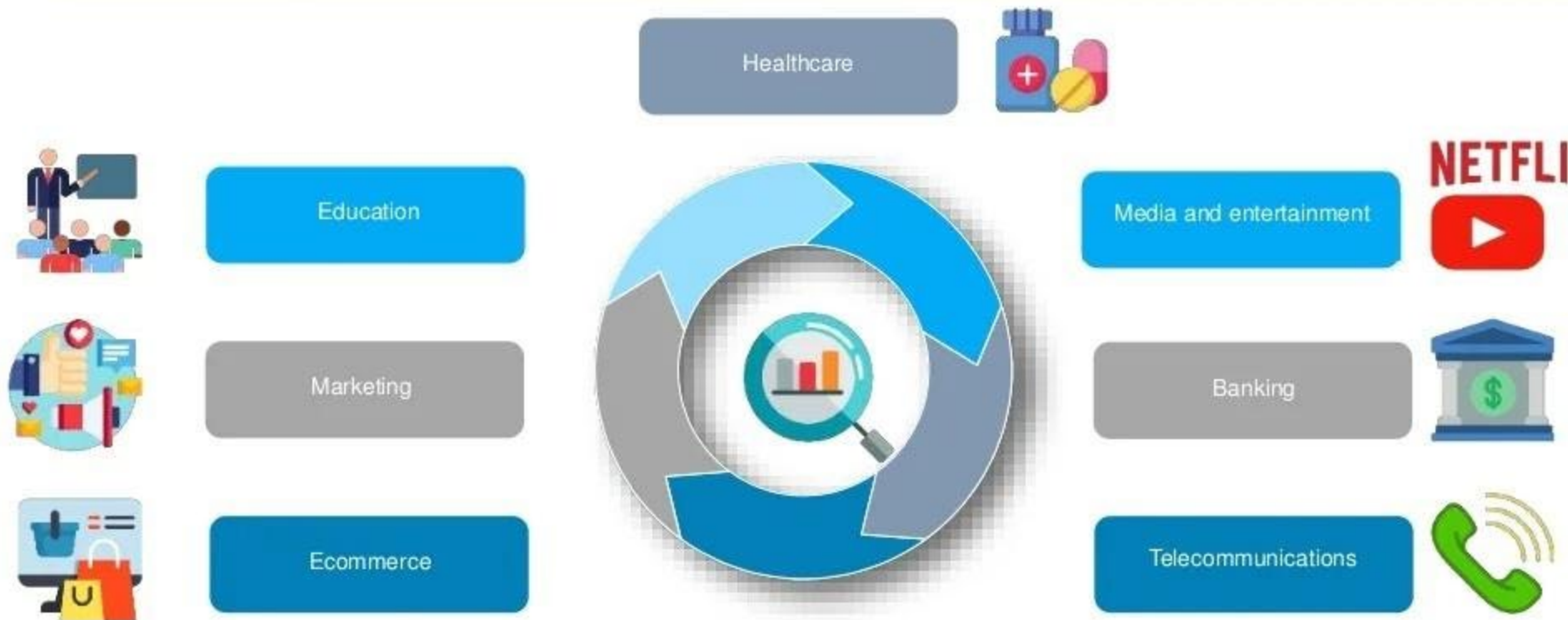
Big data analytics is used to understand the demand of shows, movies, songs and so on to deliver a personalized recommendation

Big data application domains



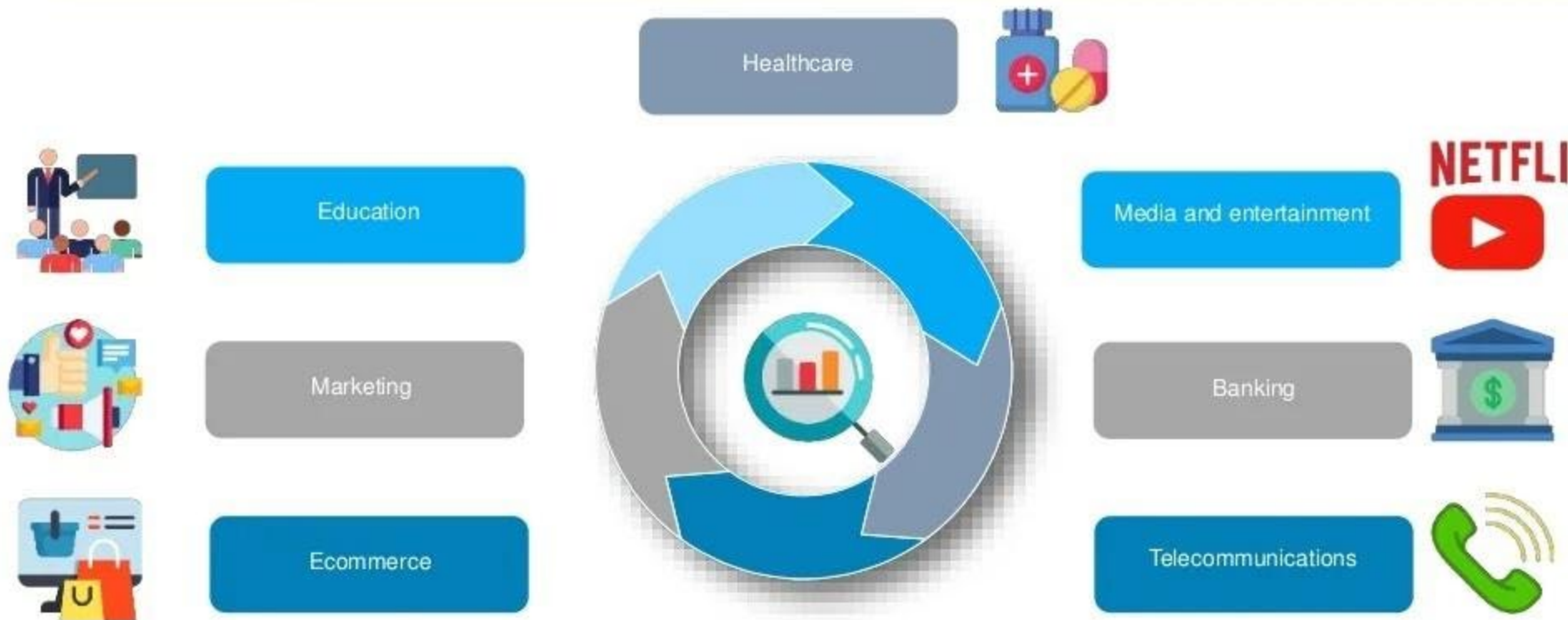
Customer income and spend patterns help in predicting the customer likelihood for choosing various banking offers like loans, credit card schemes and so on

Big data application domains



Big data analytics is used to forecast network capacity and improve customer experience in the field of telecommunication

Big data application domains



Big data analytics is used to forecast network capacity and improve customer experience in the field of telecommunication

Big data application domains



Big data application domains



Big data application domains



Thank You