

Introduction to Business Intelligence

by tdi@ek.dk

Agenda

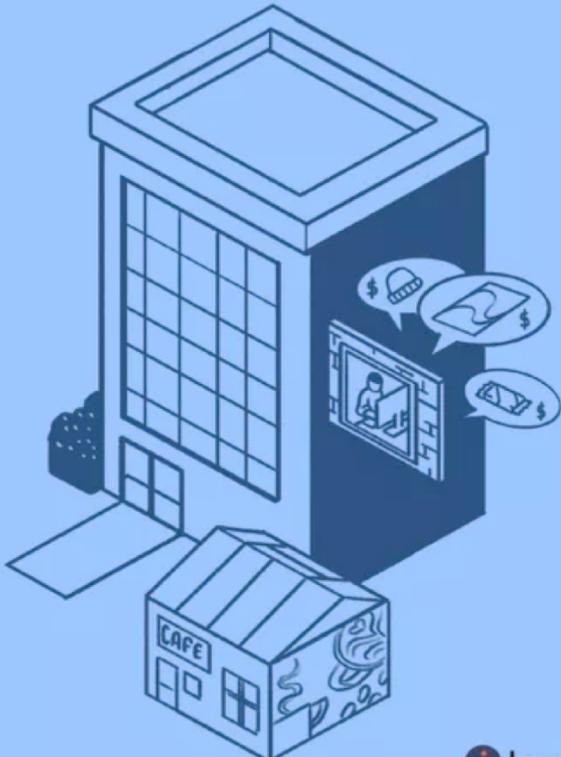
- What is Business?
- What is Business Intelligence?
- How does it work?
 - in business context
 - in software context
- How can we create BI?
 - BI Development Process
- Hitting the road

A blurred background image of a group of people, mostly young adults, sitting around a table. They are looking at laptops and appear to be engaged in a collaborative discussion or presentation. The scene is well-lit and has a professional yet casual atmosphere.

What is Business?

... company, enterprise, public institute, ...

Business



Business

[biz-nəs]

An enterprising entity engaged in commercial, industrial, or professional activities.

 Investopedia

- Most businesses generate profit, but some are non-profit organisations
- Differ in size
 - micro
 - small
 - medium size
 - large

A soft-focus photograph of five business professionals—three men and two women—gathered around a table. They are all looking towards the center or right of the frame, possibly at a laptop screen. They are dressed in casual to semi-formal attire. The background is blurred, creating a professional yet collaborative atmosphere.

What is Business Intelligence?

... software-inspired wisdom of business people

Business Intelligence

Business Intelligence (BI)
refers to skills, technologies,
applications and practices
used to help a business acquire
a better understanding of its commercial context.

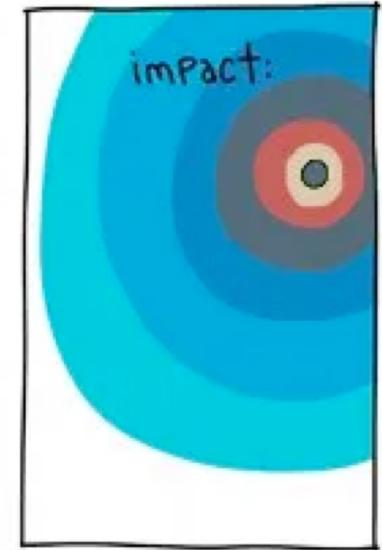
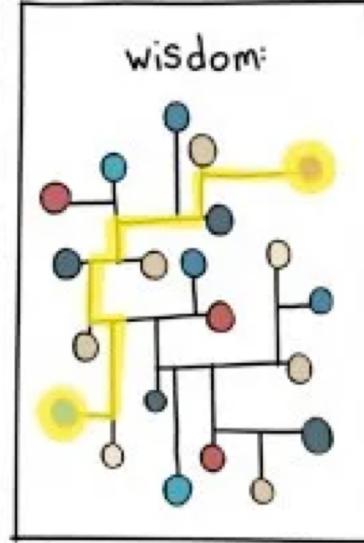
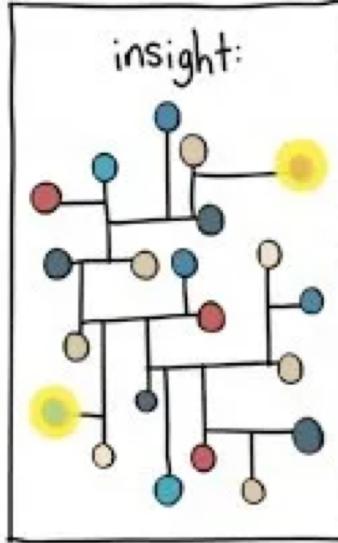
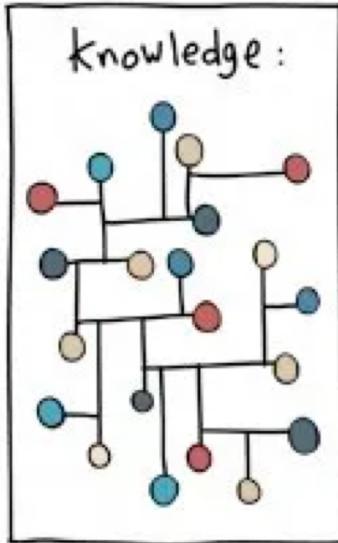
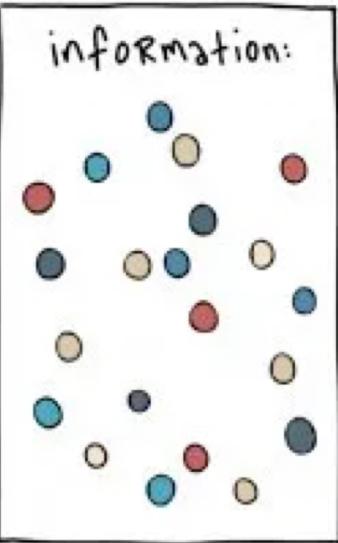
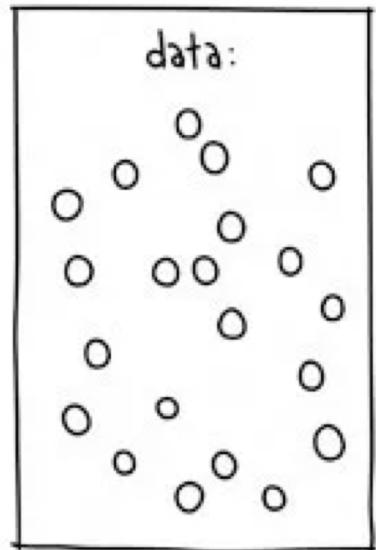


A blurred background image of a group of diverse professionals (men and women) sitting around a table, looking at laptops and discussing business intelligence.

How To Create Business Intelligence?

... by investigating the available data

The Power of Data



@gapingvoid

Data is a Product - has a value

raw data

Gender	Age	H1	F1	H2	F2	H3	F3	Height	Foot	Factor
1	Female	19.00	156.50	23.50	155.80	23.50	156.50	23.10	156.27	23.30
2	Male	21.00	165.50	25.50	165.30	24.50	166.50	25.50	165.77	25.20
3	Male	35.00	167.00	24.50	167.50	24.40	168.50	24.80	167.67	24.57
4	Female	19.00	158.50	24.60	158.50	23.50	158.70	23.50	158.57	23.67
5	Female	27.00	162.50	25.80	163.40	25.40	162.80	25.70	162.90	25.63
6	Female	19.00	159.50	23.50	158.00	23.40	158.00	23.60	158.50	23.50
7	Female	19.00	162.50	24.20	162.00	24.00	161.80	24.30	162.10	24.17
8	Female	20.00	165.40	23.90	165.00	23.80	166.00	23.80	165.47	23.83
9	Female	20.00	168.00	24.40	168.50	24.40	169.90	24.40	168.80	24.40
10	Female	22.00	159.20	24.70	159.50	24.50	160.00	24.50	159.57	24.57
11	Female	26.00	158.50	23.70	156.50	23.60	156.90	23.40	157.30	23.57
12	Female	19.00	162.00	24.30	161.00	24.60	160.90	24.40	161.30	24.43
13	Female	20.00	153.50	23.20	153.50	23.70	152.50	23.00	153.17	23.30
14	Female	21.00	158.00	24.90	157.70	24.60	158.50	24.90	158.10	24.80
15	Female	20.00	154.50	24.50	156.40	25.10	154.50	24.30	155.13	24.63
16	Female	20.00	163.00	23.00	161.50	24.00	163.50	23.50	162.67	23.50
17	Female	22.00	162.00	27.50	181.50	27.00	182.00	28.00	181.83	27.50
18	Male	27.00	175.00	27.50	176.50	27.50	176.50	27.50	176.67	27.50
19	Male	19.00	153.10	23.30	152.00	23.00	151.00	22.50	152.03	22.93
20	Female	22.00	170.00	25.00	172.50	25.60	170.50	25.50	171.00	25.37
21	Male	19.00	160.00	23.50	159.50	23.00	159.00	23.80	159.50	23.43
22	Female	20.00	155.50	23.20	154.40	23.00	153.50	22.50	154.47	22.90
23	Female	21.00	151.50	23.50	151.00	23.80	150.80	23.10	151.10	23.47
24	Female	21.00	158.00	23.50	158.50	24.20	157.80	23.50	158.10	23.73

processing/refinement

Gender	Age	H1	F1	H2	F2	H3	F3	Height	Foot	Factor
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15	Female	20.00	154.50	24.50	156.40	25.10	154.50	24.30	155.13	24.68
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product/information



monetizing



See also Data Marketplaces

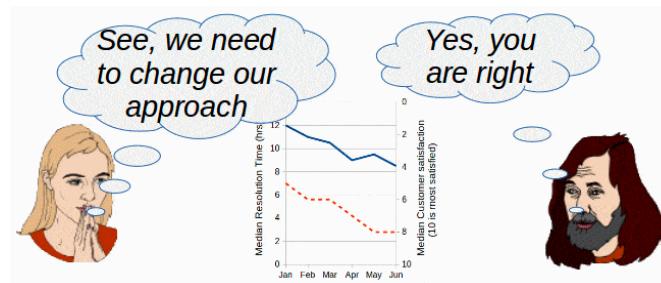
<https://research.aimultiple.com/data-marketplace/>

Data is an Asset – creates new values

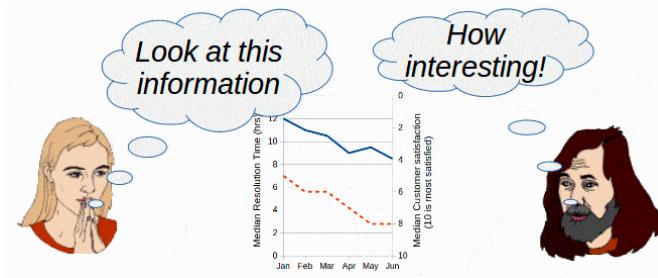
Every new insight drives new questions, new data, more analytics, and new insights!

Every Company is a Data Company

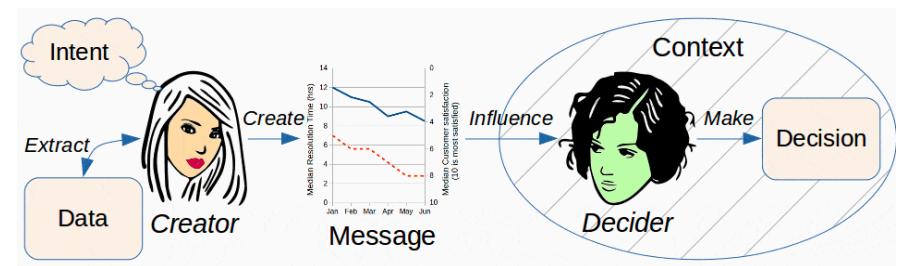
- Data is informing
- Data is persuading



- Data is engaging



<https://www.3cs.ch/information-visualization-data-visualization/>

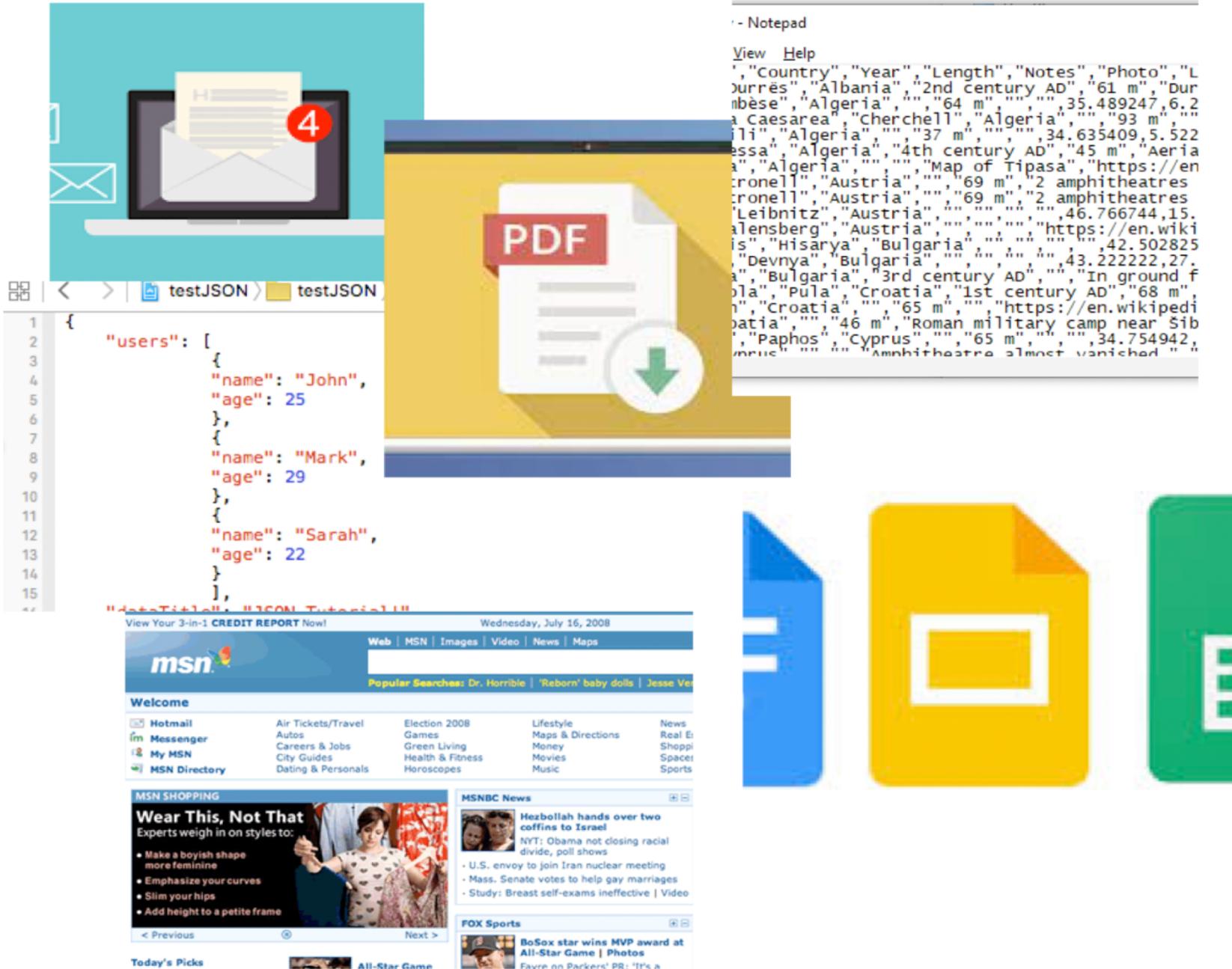


Raw Data

from various digital sources

collecting data of various formats

- doc
- pdf
- txt
- mails
- web pages
- wiki data
- Excel files (csv)
- json
- ...



Hands-On

Data Exercises

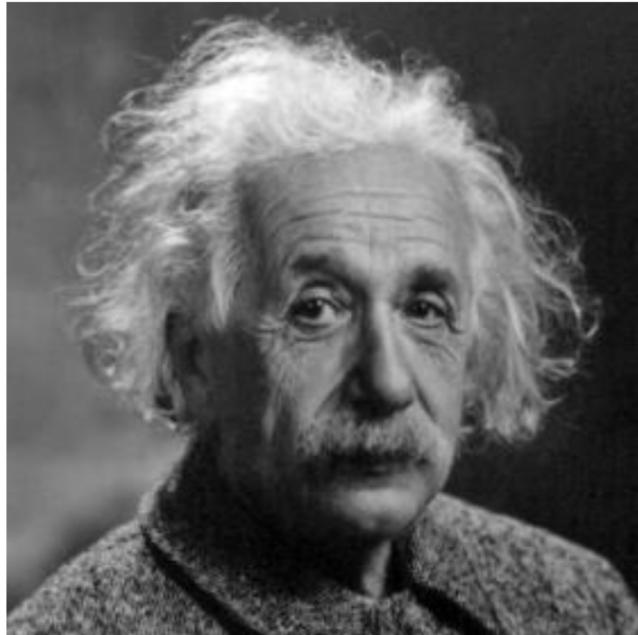


A blurred background image of a group of people, mostly young adults, sitting around a table in what appears to be a classroom or office setting. They are all looking towards the left side of the frame, where a person's hands are visible on a laptop keyboard. The scene is softly lit, creating a professional yet collaborative atmosphere.

How Does It Work?

... by formulating proper answers to proper questions

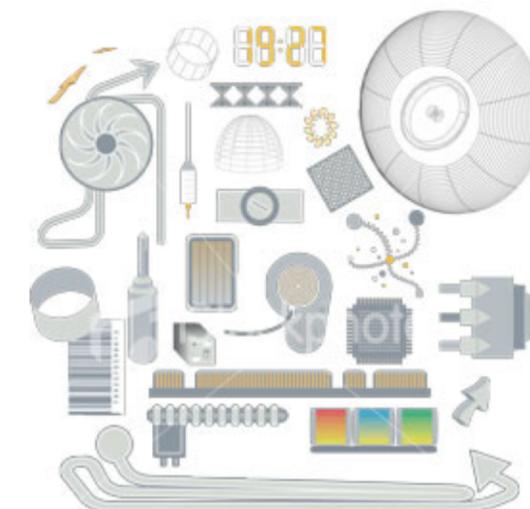
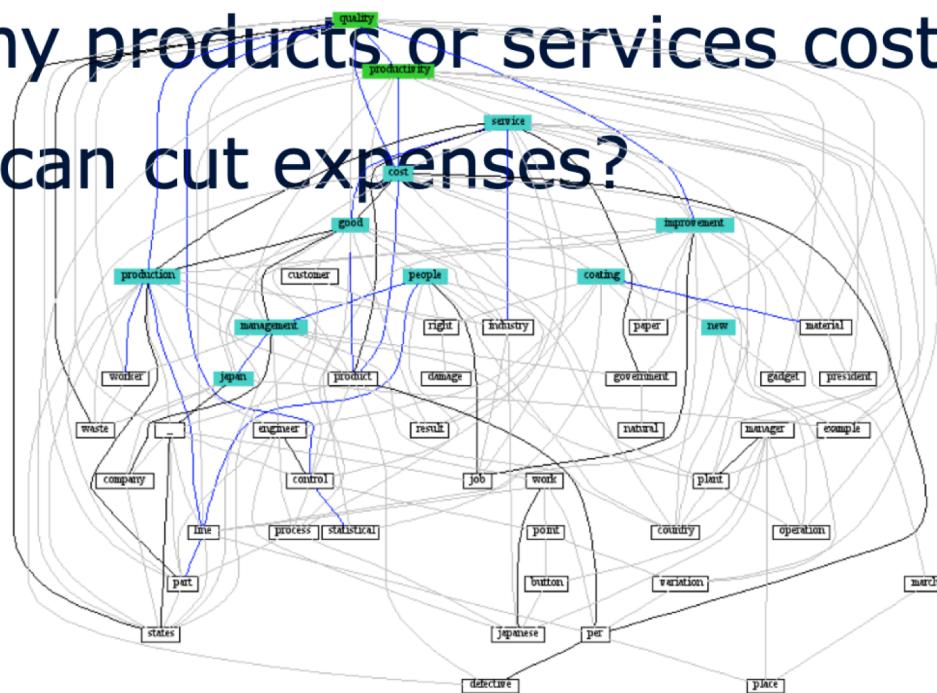
Albert Einstein (1879-1955)



“If I had an hour to solve a problem and my life depended on it, I would use the first 55 minutes determining the proper questions to ask”

Examples

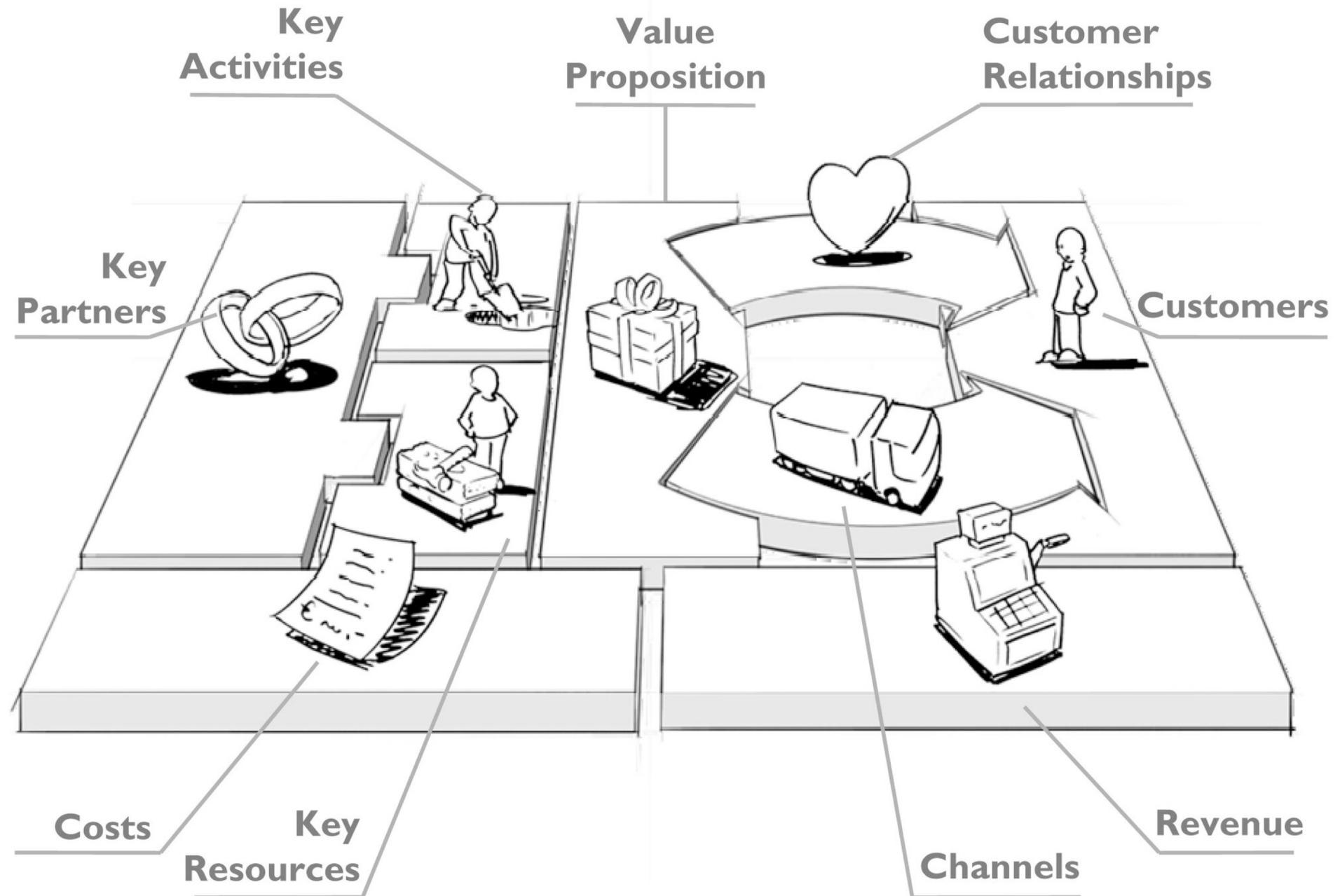
- Who are my customers?
 - Which of them brings more profit?
 - Which of my products or services cost most?
 - Where we can cut expenses?



Business Aspects

- Context
 - what is already known about this business?
 - what else we would like to know?
 - we start with the business model and the context and then search for data
- Audience
 - who is interested in getting new knowledge?
 - who can be a partner?
 - everyone, who is not a concurrent can be a partner
- Resources
 - where can we get the information from?
 - more data sources
 - better data sources

Key Business Features



drawings by JAM

Business Model Canvas Netflix

Key partners

- Content owners
- Internet Service Providers
- Amazon Web Services
- Filmmaker "guilds" and individuals
- Cinemas, Theaters
- Prizes and film festivals
- Influencers
- IP holders
- Regulators (FCC, FTC)
- Investors

Key activities

- Tech & development
- Content licensing and acquisition
- Content creation
- Marketing
- Analytics

Value proposition

- Content library
- No ads
- On-demand
- Ability to binge watch:
- Simple pricing
- High-speed connection
- Freemium
- Personalisation
- Localisation

Customer relationships

- Self-service (App)
- User support
- Social media
- Self-control, trust
- Recommendation system (engage)

Customer segments

- Micro segmentation: 2,000 taste clusters
- User segmentation (usage parameters):
 - Technology
 - Viewing behaviors
 - Browsing behaviors

Key resources

- Brand
- App/website
- Content
- Algorithms & data
- Staff, actors, filmmakers
- Prizes

Channels

- Desktop, tablet, mobile
- App stores
- Support channels
- Social media
- Media outlets
- Film festivals

Macro segments / ad targeting (non-users):

- Geo-demographic
- other macro

Cost structure

- Marketing
- Technology
- General & Admin

Costs of revenue:

- Content amortisation
- Payment processing fees
- Customer service
- Streaming delivery costs
- Operations costs

Revenues

- Subscription fees (3 plans):
 - International streaming
 - US streaming
 - US DVD

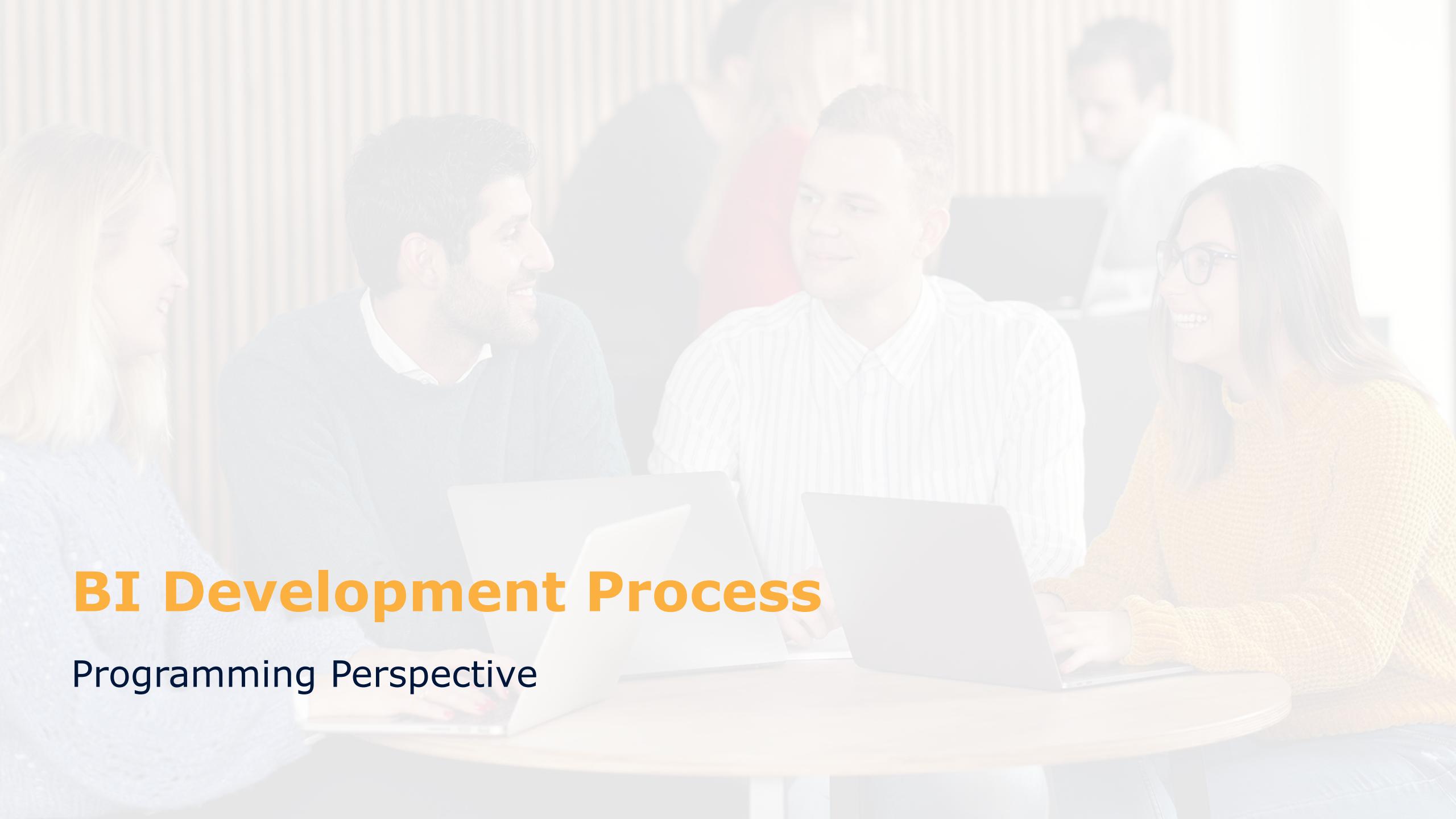
Other, minor revenues

- Potential future revenue stream:
 - Licensing out Netflix-owned content

Hands-On

Business Exercise



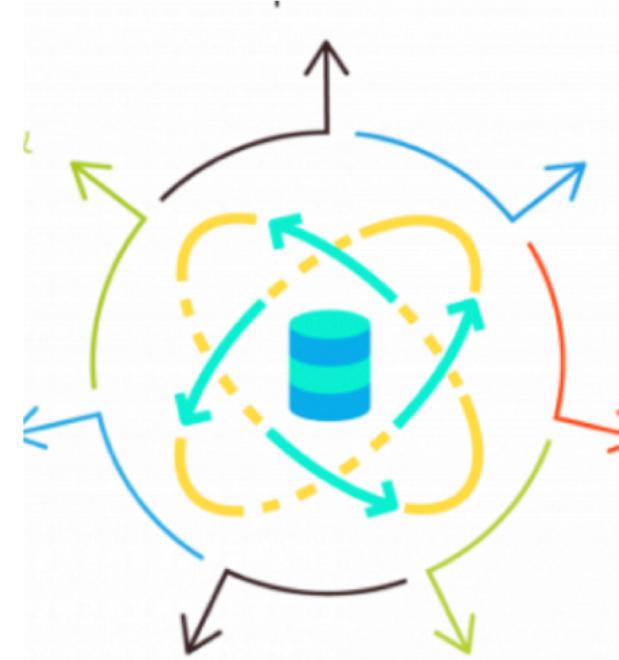
A blurred background image of four people in an office environment. From left to right: a woman with long blonde hair looking down at her laptop; a man with dark hair and a beard smiling; another man in a striped shirt looking towards the camera; and a woman with glasses and long dark hair smiling. They are all seated at a table with laptops open.

BI Development Process

Programming Perspective

BI Workflow

Development Life Cycle

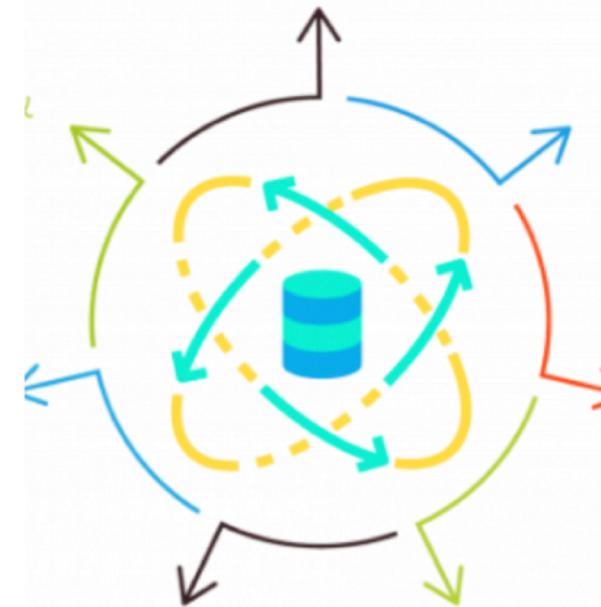


BI Workflow

Know the business



Define Business
Requirement



BI Workflow

Get the data

Data acquisition and pre-processing

Collecting, compiling, and storing raw data from business's activities and multiple data sources, identifying the dimensions and measurements, preparing it for data analysis

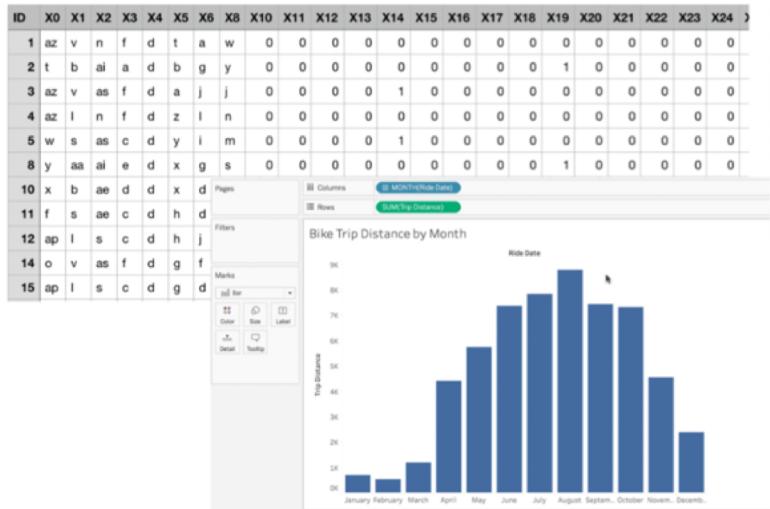


BI Workflow

Explore the collected data

Descriptive analytics

Using preliminary data analysis for understanding, validation, and testing



BI Workflow

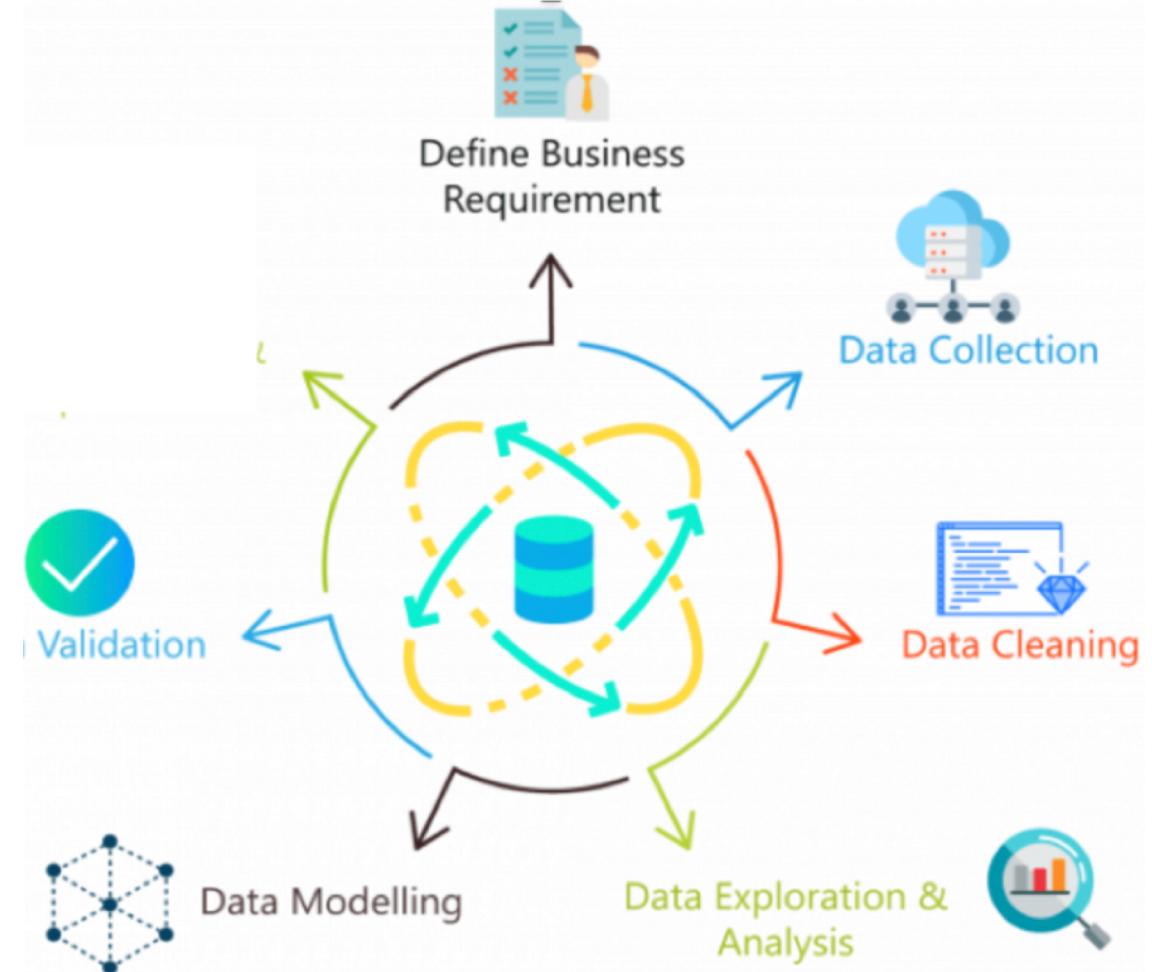
Create and validate predictive data models

A **data model** is an abstract model that organizes **elements** of data and defines how they **relate** to one another and to the properties of real-world entities

Predictive analysis: Taking the results from descriptive analytics and further exploring the data using statistics, data mining and machine learning techniques **to uncover trends**, how and why they happen

Querying: Asking the data specific questions, BI pulling the answers from the datasets

Performance optimization: Creating performance measures and customized dashboards



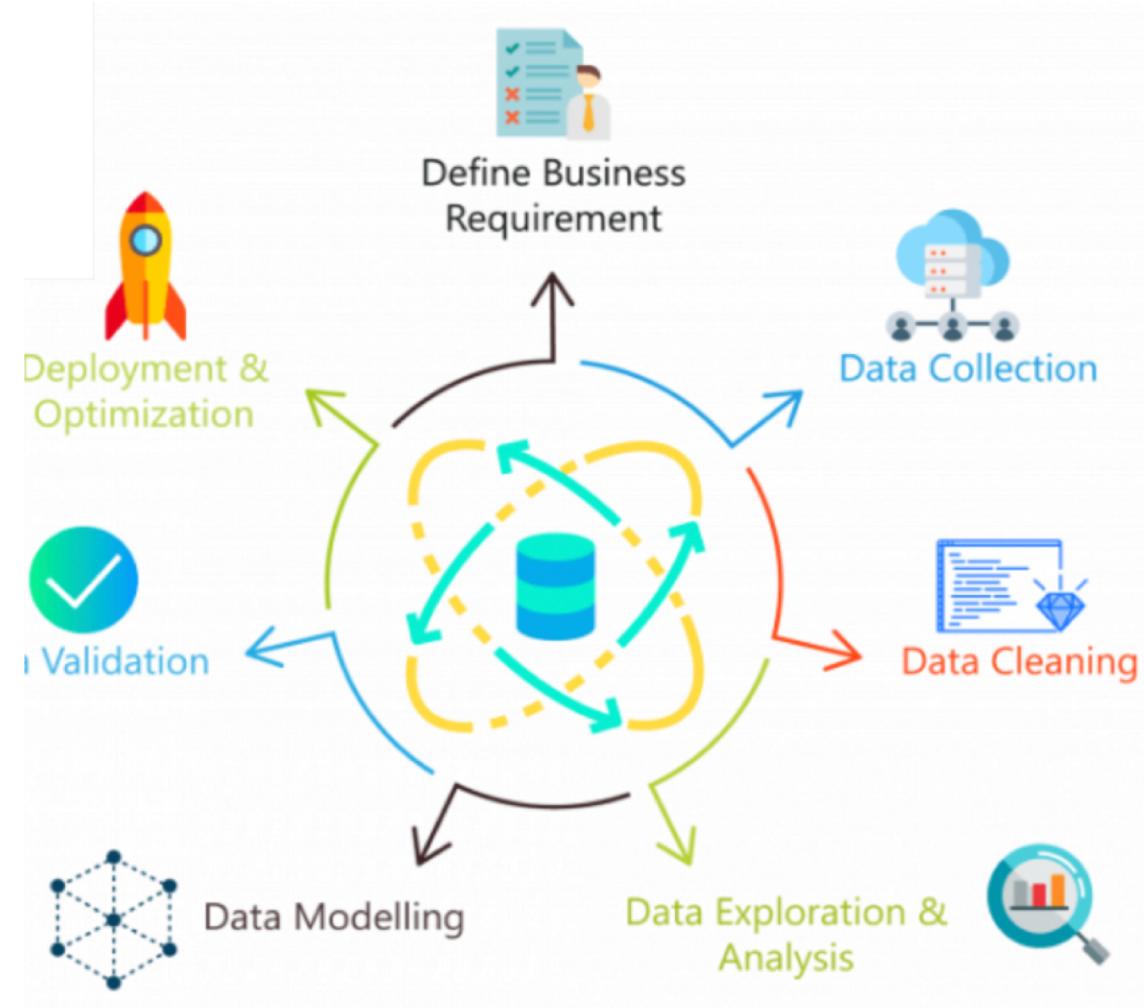
BI Workflow

Implement and optimise the best model

Reporting: Sharing data analysis to stakeholders so they can draw conclusions and make decisions

Data visualization: Turning data analysis into visual representations such as charts, graphs, histograms, and visual stories for business to more easily consume the data and the information of it

Interaction and usability: Creating understandable report, which can be used for self-service analytics



Hands-On

Demo Case

