POWER BI

SHARED BY: THUNNM

COURSE OUTLINE

1. **Introducing Power BI Desktop**
   - *Installing Power BI, exploring the Power BI workflow, comparing Power BI vs. Excel, etc.*
2. **Connecting & Shaping Data**
   - *Connecting to source data, shaping and transforming tables, editing, merging and appending queries, etc.*
3. **Creating a Data Model**
   - *Building relational models, creating table relationships, understanding cardinality, exploring filter flow, etc.*
4. **Adding Calculated Fields with DAX**
   - *Understanding DAX syntax, adding calculated columns and measures, writing common formulas & functions, etc.*
5. **Visualizing Data with Reports**
   - *Inserting charts and visuals, customizing formats, editing interactions, applying filters and bookmarks, etc.*

INTRODUCING THE COURSE

1. **THE BRIEF**

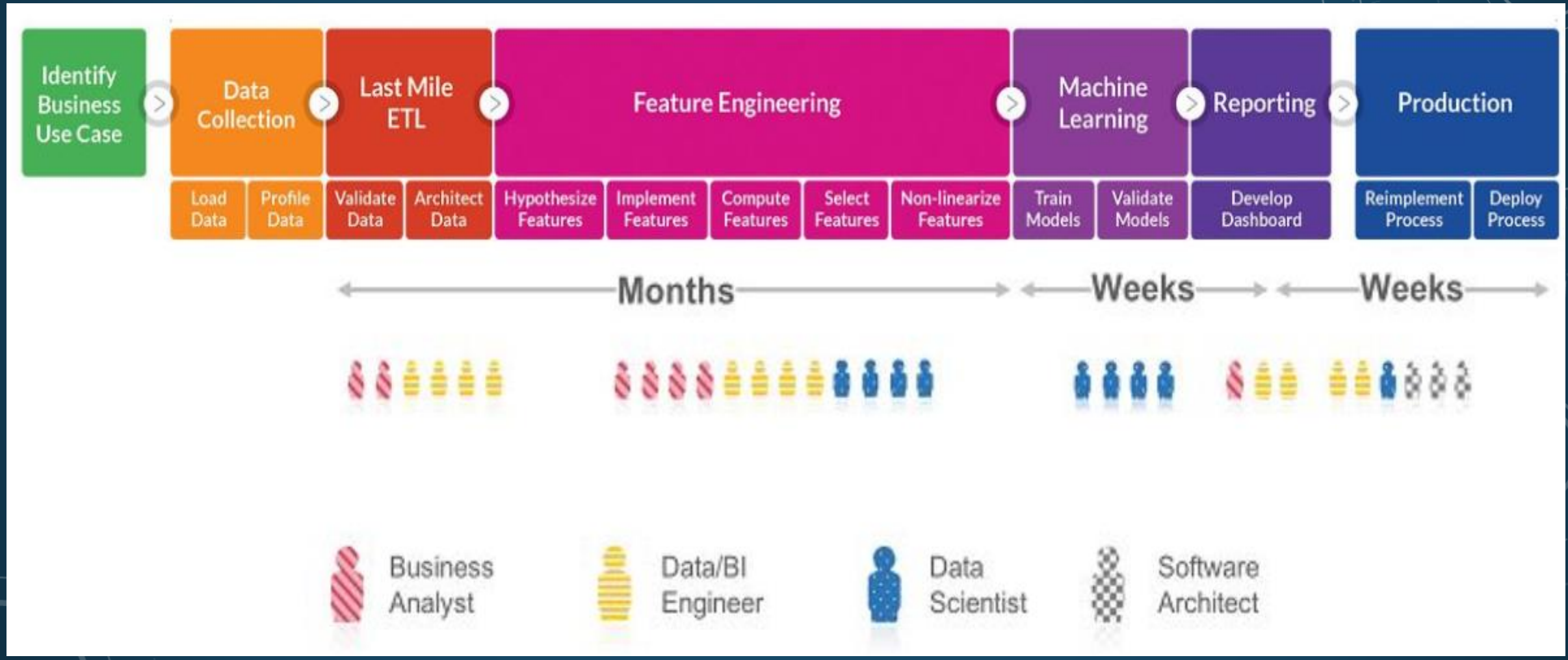
- Your client needs a way to **track KPIs** (*sales, revenue, profit, returns*), **compare regional performance, analyze product-level trends and forecasts,** and **identify high-value customer.**

2. **THE OBJECTIVE**

- **Use Power BI Desktop to:**
  - ✓ Connect and transform the raw data
  - ✓ Build a relational data model
  - ✓ Create new calculated columns and DAX measures
  - ✓ Design an interactive report to analyze and visualize the data

DAY 1 – BUSINESS INTELLIGENCE

TRADITIONAL DATA SCIENCE PROCESS



Source: [How will automation tools change data science?]

OBJECTIVE

- Get the basic Business Intelligence concepts.
- Understand what makes a visualization effective through the study of core principles.

AGENDA

01

Business Intelligence

Concepts,

Traditional vs Modern BI,

Users, Benefits, Limitations

02

Data Visualization

Definition,

Tips

PART 1 – BUSINESS INTELLIGENCE

GLOBAL BIG DATA MARKET

Market Segmentation

- By Component
  - Hardware
  - Software
  - Service
- By Technology
  - Predictive Analytics,
  - Machines Learning & Data Mining, Natural Language Processing,
  - Stream Processing, Hadoop, NoSQL, and MPAD.
- By Organization Size
  - Large Enterprise and SMEs.
- By Deployment
  - On-Premise and On-Cloud.
- By End-User
  - BFSI, Manufacturing,
  - IT, Government,
  - Telecommunications, Transportation, Healthcare, Energy & Utilities, Retail and Others.

Source: *Global Big Data Market research Report - Forecast till 2023*

WHAT IS BUSINESS INTELLIGENCE ?

"Business Intelligence is a set of methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information used to enable more effective strategic, tactical, and operational insights and decision-making"

…Forrester Research

TRADITIONAL BI

Problems with traditional reporting solutions:

- Need to integrate data from a variety of data systems, often in different formats.
- Reports are slow, getting timeouts, badly formatted, and inflexible
- Systems are not optimized for analytical queries, don't contain all the data needed
- Does not manage historical context
- Employees may not have the sufficient skills, tools, or permissions to query data systems
- Want to use data in other front-end tools to do ad-hoc querying and data mining

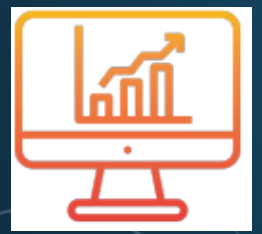
MODERN BI (SELF-SERVICE)

Real-Time Data

It's time everyone has access to fresh, reliable data. Keep key decision makers informed, minute by minute.

Data Visualization

Make data as easy to understand as possible. Transform data sets into charts, graphs and tables with beautiful data visualization.



Report & Dashboards

Save time and focus on what really matters with better data visualization.

Security

Choose a BI software solution that prioritizes user safety snd privacy, keeping hackers and competitors at bay.

Customer & Technical Support

Looking for a quick answer to pressing question? Select a data analytics software program that gives you reliable access to technical and customer support.

Ease of Use

Not everyone is a trained data analyst.

Source: *Top business intelligence tools: find what works best*

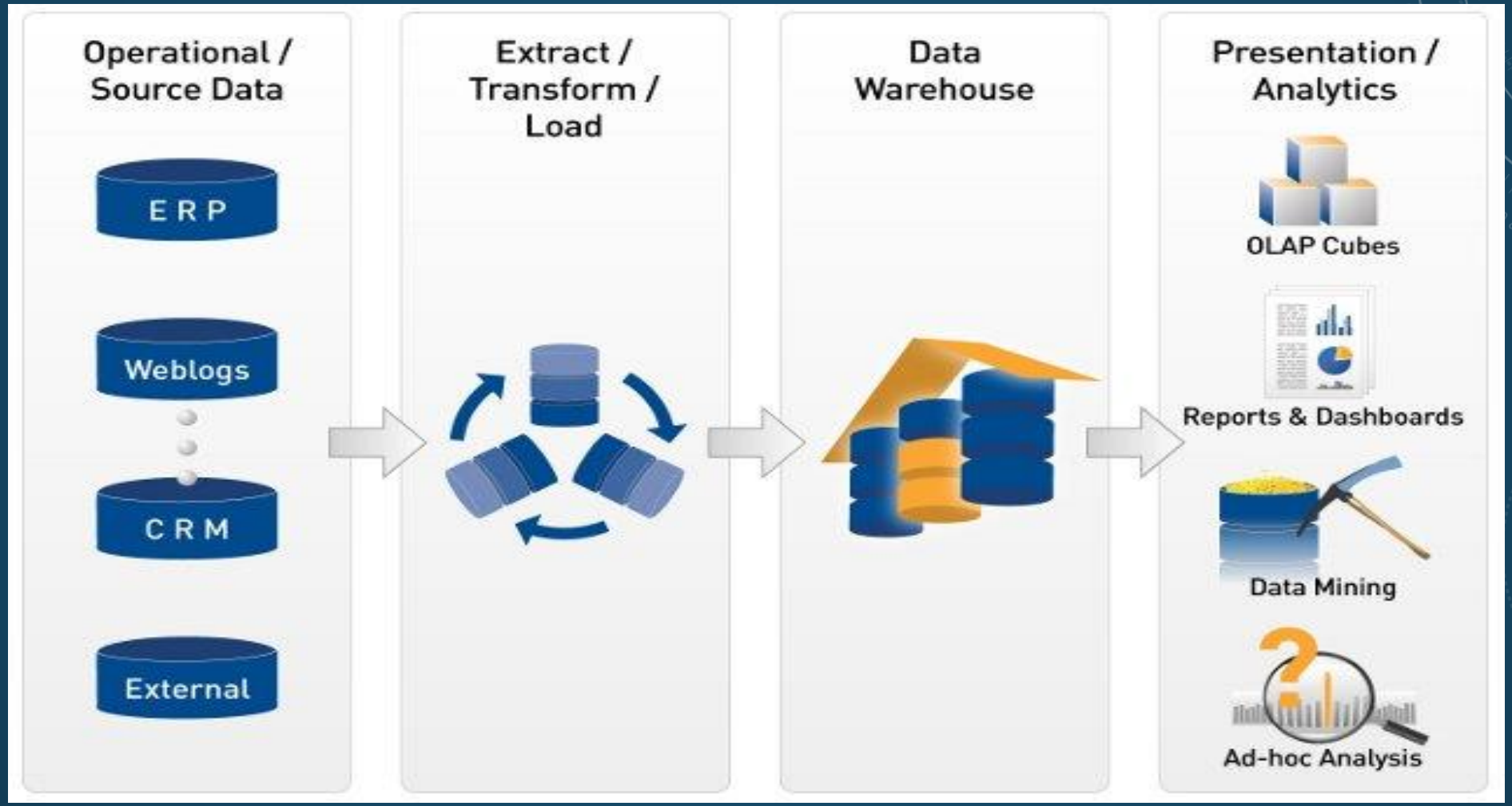
TRADITIONAL BI VS. SELF-SERVICE BI

Traditional BI vs. self-service BI

TRADITIONAL BI	SELF-SERVICE BI
Business user gathers requirements for a report/dashboard.	IT team gathers user requests for self-service tool.
User submits request to IT.	Self-service tool is implemented, giving business users access to data.
IT extracts the data and loads it into a data warehouse for analysis.	Business user accesses data directly.
IT creates data model.	Business user prepares data to include.
User approves report or dashboard, or requests changes.	Business user creates data model.

Source: The Best Self-Service BI Tools For 2019

BUSINESS INTELLIGENCE COMPONENTS



Source: Business Intelligence: A Primer

BUSINESS INTELLIGENCE USERS

Top 4 users of Business Intelligence in an organization

Data Analyst

Data analysts deal with the collection and processing of data.

Executive

The job of an executive includes strategizing and planning policies that work in favor of the organization.

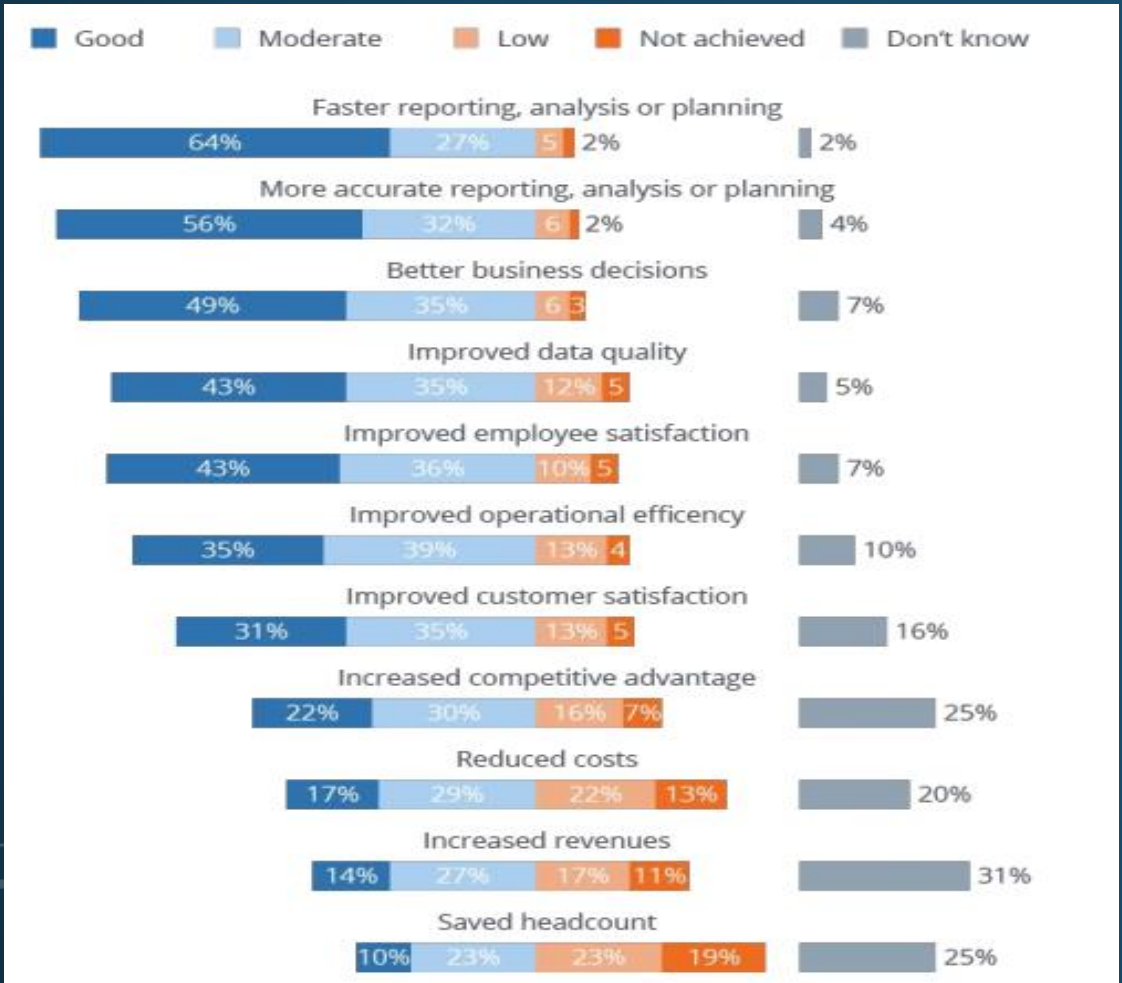
Business User

Business users are usually managers who help in making the various departments of an office more efficient.

IT Team

The IT team is involved in a plethora of activities.

BENEFITS OF BUSINESS INTELLIGENCE



To what level have you achieved the following benefits with BI? (n=2,618 business intelligence users):

- Faster reporting, analysis or planning
- More accurate reporting, analysis or planning
- Better business decisions
- Improved data quality
- Improved employee satisfaction
- Improved operational efficiency
- Improved customer satisfaction
- Increased competitive advantage
- Reduced costs
- Increased revenues
- Saved headcount

Source: The Benefits of Business Intelligence... Why Do Organizations Need BI?

LIMITATIONS OF BUSINESS INTELLIGENCE

- Cost
- Complexity
- Mudding of commercial settings
- Limited use

BUSINESS INTELLIGENCE DASHBOARDS

Sales KPI dashboard - It includes Sales Growth, Sales Target, Acquisition Cost, CLV (customer lifetime value), and ARPU (average revenue per unit), this dashboard for business intelligence offers all of the tools to make your business more economically efficient, and as a result, more valuable.

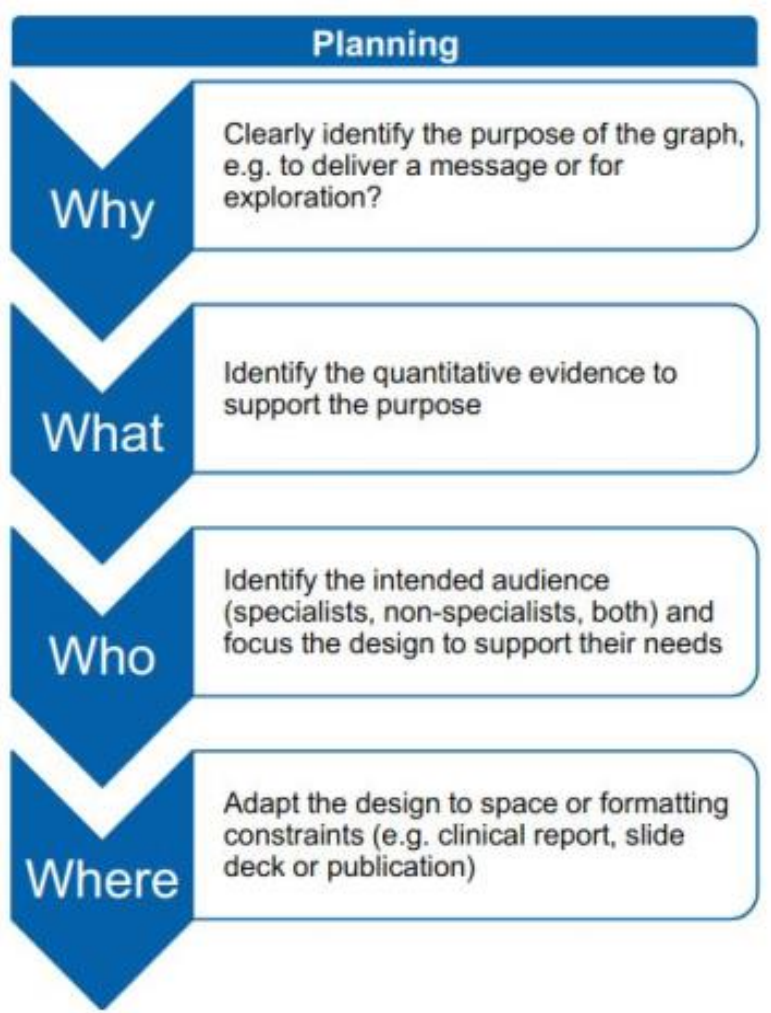
Source: The Benefits of Business Intelligence... Why Do Organizations Need BI?

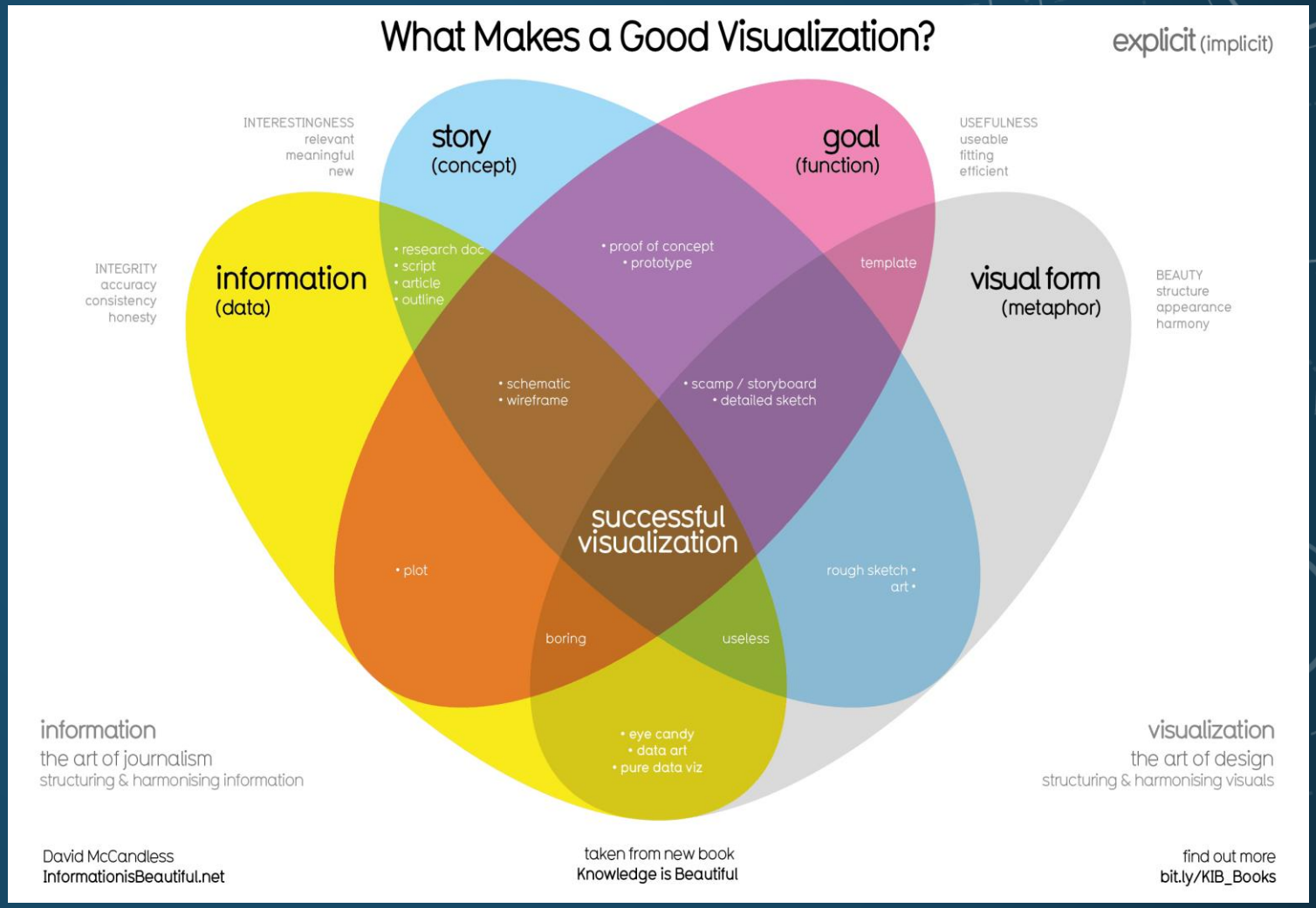
PART 2 – DATA VISUALIZATION

WHAT IS DATA VISUALIZATION ?

- Convert raw information (text, numbers, or symbols) into a graphic format.
- To show logical correlations between units, and define inclinations, tendencies, and patterns.
- Tools: charts, dashboards, diagrams, drawings, graphs, maps...

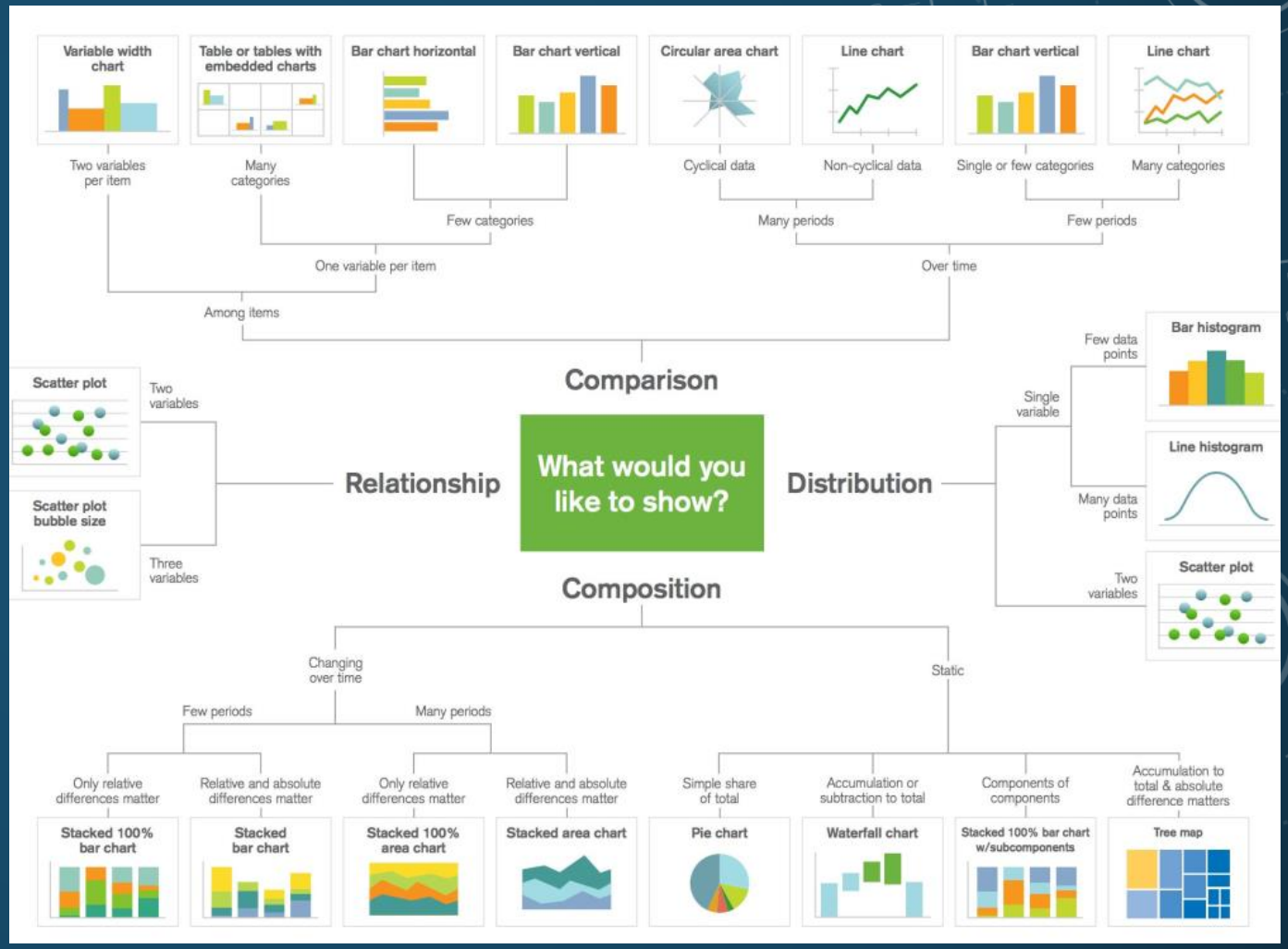
WHAT MAKE A GOOD DATA VISUALIZATION ?





HOW TO CHOOSE THE RIGHT CHART TYPE ?

- How many variables do you want to show in a single chart? One, two, three, many?
- How many items (data points) will you display for each variable? Only a few or many?
- Will you display values over a period of time, or among items or groups?



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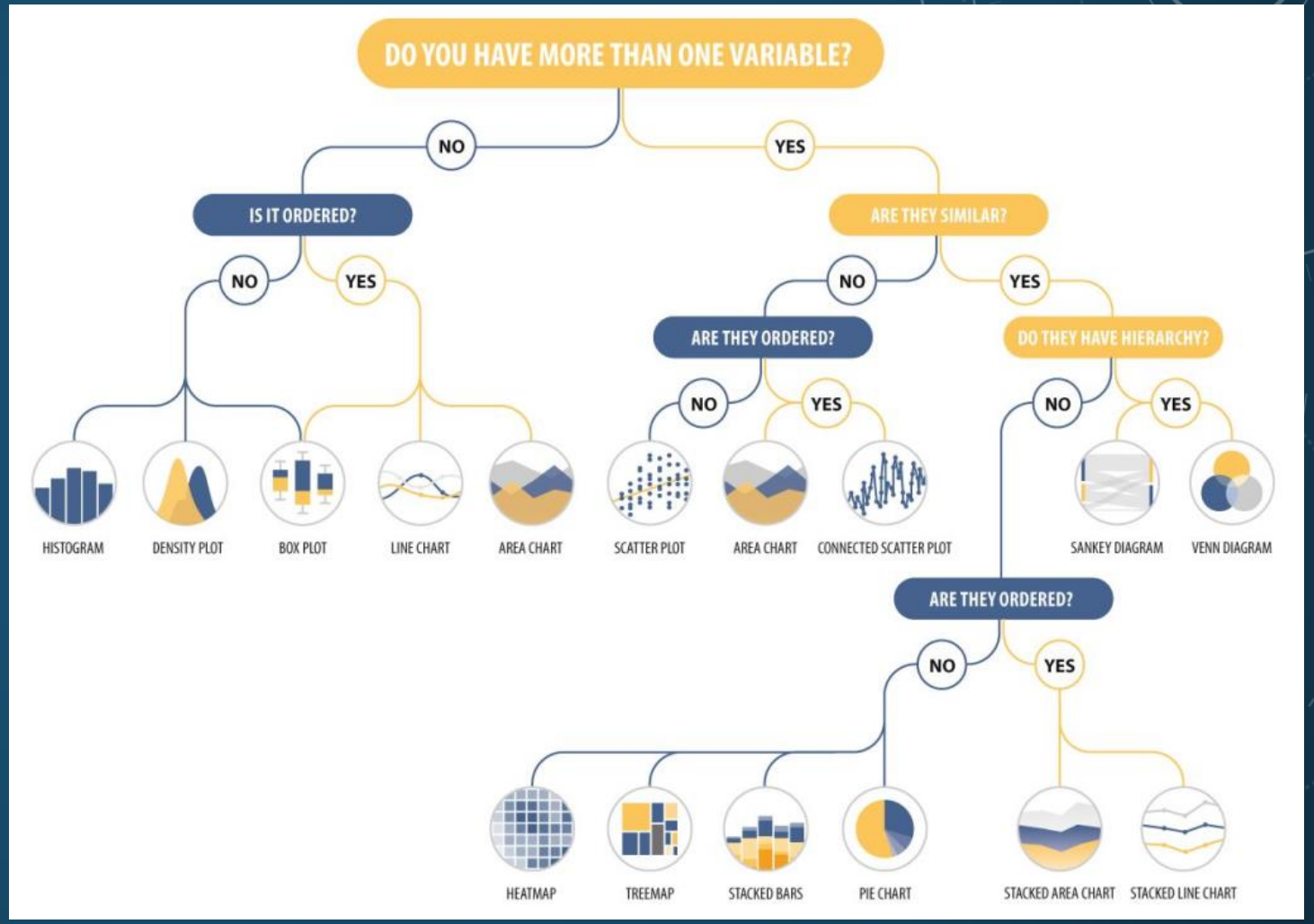
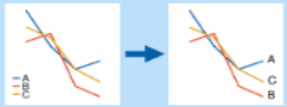


TIPS FOR EFFECTIVE DATA VISUALIZATION

Facilitating Comparisons

Proximity improves association

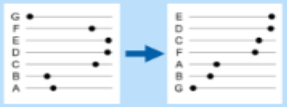
Place labels next to data instead of using legends



Group together elements to be compared directly

Ease visual inspection

Order values to help compare across many categories



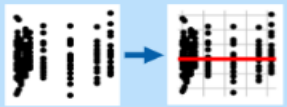
Judgments are easier to make on a common vertical scale

Reduce mental arithmetic

Plot the final comparison e.g. mean difference not two means

Exception: if comparator is of interest in itself

Use reference lines and other visual anchors.



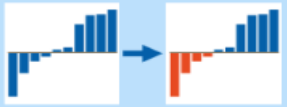
Color for emphasis or distinction

Restrained use of color is highly effective in organizing a narrative and calling attention to certain elements.

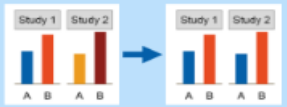
Think carefully before introducing additional color. Do you really need it?

Do not use color to differentiate between categories of the same variable

Use colors or shades to represent meaningful differences such as positive/negative values, treatments or doses

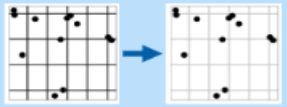


Be consistent, use the same color to mean the same thing in a series of graphs (e.g. treatment, dose)



Use a bold, saturated or contrasting color to emphasize important details.

Emphasize the data by minimizing unnecessary ink, e.g. soften gridlines with a light color

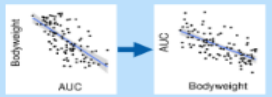


Utilize existing resources for selection of appropriate palettes such as
Color brewer
or Munsell

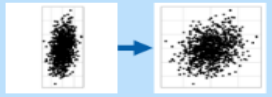
NOVARTIS

Implementation Considerations

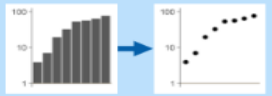
Plot cause on the x-axis and effect on the y-axis. Use this standard convention in order to avoid misinterpretation.



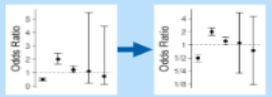
Aspect ratio can influence interpretation. Aim for a 45 degree angle of change to avoid over-interpretation of slope.



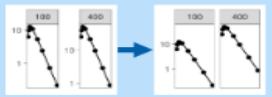
Use position for comparisons rather than length (i.e. dots instead of bars), especially for non-linear scales (e.g. log scale or % change).



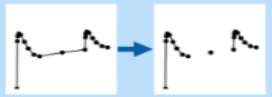
Do not plot log-normally distributed variables on a linear scale (e.g. hazard ratio, AUC, CL)



When displaying data measured on the same scale, also plot them on the same scale for easy comparison.



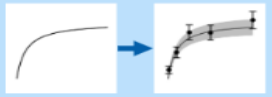
Connected data imply continuity. Do not connect data across a disconnected or uneven time scale.



Visits displayed close together are perceived to be closer in time. Space the visits proportional to the time between each in order to avoid confusion.

Exception: baseline or pre-dose

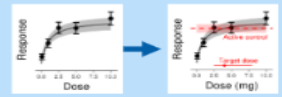
Plot data and inferences to support stories about models.



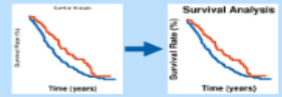
Legibility and Clarity

Effective graphs stand alone. They use titles, annotations, labels, shapes, colors, and textures to deliver important information.

Label axes with clear measurement units and provide annotations that support the message.



Use font size to create hierarchy (e.g. set titles 2pt larger than all other labels to make them more prominent).

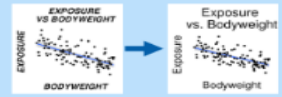


Do not type too small or too condensed. Break long titles into two lines. Shift or adjust size of labels that overlap.

Keep the font style simple – sans serif is easier to read.

Display text with enough contrast to be visible. Favor the use of dark on light instead of light on dark whenever possible.

Bold or italics should only be used for layering or emphasis. Emphasizing everything means nothing gets emphasized.



Try not to set text at an angle, as this decreases readability. Think of alternative solutions such as transposing the graph.

THANK YOU

Q&A