Introduction to Data Visualization

Presented by Wing Chan

Agenda

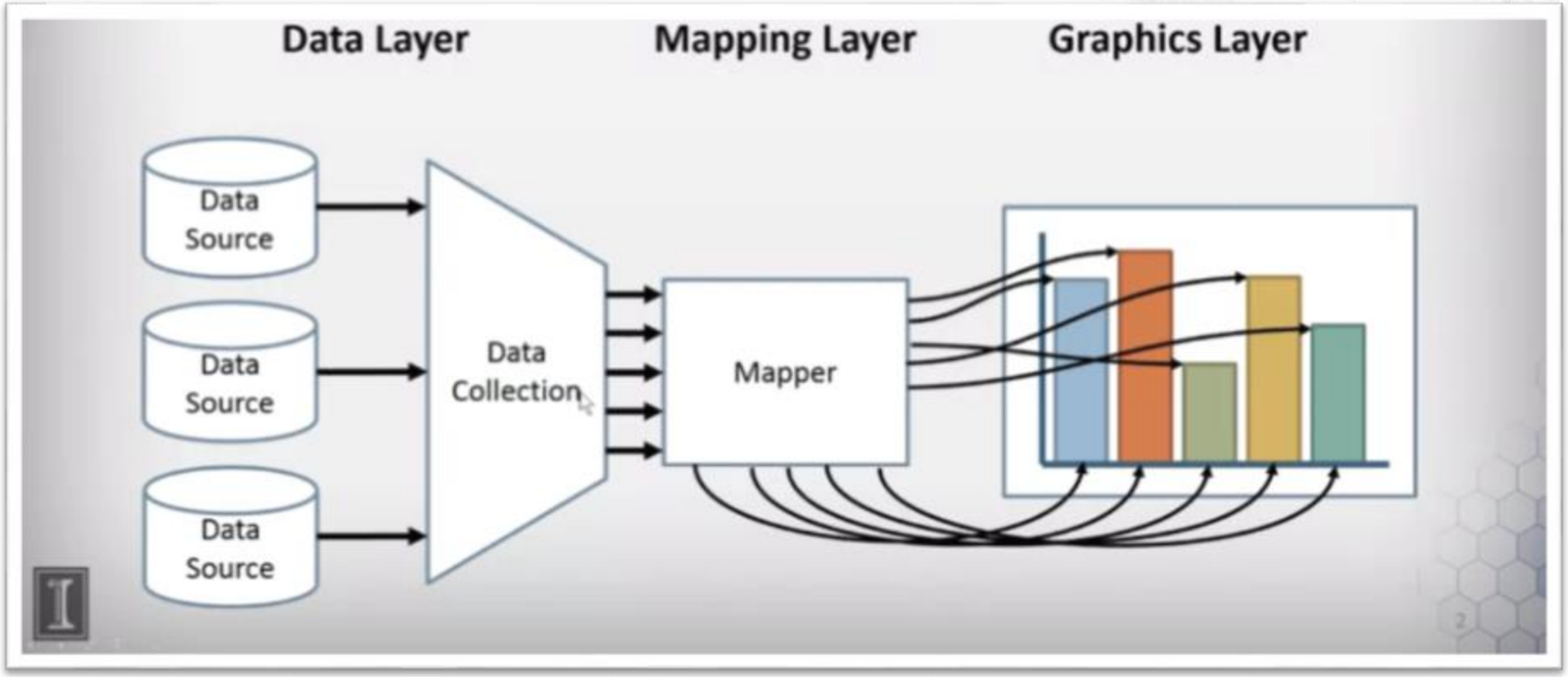
- Concept
- Data Visualization Framework
- Tableau Demo

Concept

Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data.

In the world of Big Data, data visualization tools and technologies are essential to analyze massive amounts of information and make data-driven decisions.

Data Visualization Framework



Data Layer

- Purposes:
  - Locating and obtaining data
  - Importing data in proper format
  - Relating data for proper correspondence
  - Data analysis and aggregation
- Data Types
  - Discrete vs Continuous
  - Ordered vs Unordered

	Discrete (no between values)	**Continuous** (values between)
Ordered (values are comparable)	**Ordinal,** e.g. size: S,M,L,XL,… **Quantitative,** e.g. counts: 1,2,3,…	**Fields,** e.g. altitude, temperature
Unordered (values not comparable)	**Nominal,** e.g. shape: ☐○△ **Categories,** e.g. nationality	**Cyclic values,** e.g. directions, hues

Mapping Layer

- Purposes
  - Associating appropriate geometry with corresponding data channels
  - Data analysis and algorithms
- Perceptual Accuracy

Quantitative	Ordinal	Nominal
Position	Position	Position
Length	Density	Hue
Angle	Saturation	Texture
Slope	Hue	Connection
Area	Texture	Containment
Volume	Connection	Density
Density	Containment	Saturation
Saturation	Length	Shape
Hue	Angle	Length
	Slope	Angle
	Area	Slope
	Volume	Area
		Volume

Graphics Layer

- Purposes:
  - Conversion of geometry into displayable image
  - Decorations
  - Managing interaction
- Common Charts
  - Bar Chart, Line Chart, Scatter Plots and Gantt Chart
- What to use?

Dep.	Quantitative Continuous	Bar	Line
	Quantitative Discrete	Bar	Bar
Ind.	Quantitative Continuous	Gantt	Scatter
	Nominal or Q. Discrete	Table	Gantt
		Nominal or Q. Discrete	Quantitative Continuous
		Independent	

Tableau Demo

- Tool: Tableau Public
- Data: Titantic Survival dataset from Kaggle
  - https://www.kaggle.com/c/titanic/data
- Demo: Titantic Survival Dashboard
  - https://public.tableau.com/profile/wing.chan7063#!/vizhome/TitanticDashboard/Dashboard


Questions?