

Using Interactive Visualizations to Explore Relationships in Data



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Overview

Building interactive visualizations in Python

Zooming, panning and using tooltips

Introducing the Vega visualization grammar

Interactive visualizations using Altair

Interactive visualizations using Plotly

Introducing Altair

Altair

A declarative, statistical visualization library for Python that is great for building interactive visualizations. Based on visualization grammars named Vega and Vega-lite.

Declarative Syntax

{JSON}

Declare links between

- Data channels
- Visual encoding channels

Grammar needed for declarative syntax

- Vega
- Vega-lite

Vega

A visualization grammar, a declarative language for creating, saving, and sharing interactive visualization designs.

Vega-lite

A high-level grammar for building interactive graphics using concise JSON specifications. These specifications can be compiled into Vega specifications.

Vega-lite

{JSON}

JSON specification that maps data to points, bars

Vega-lite compiler adds axes, legends, scales

Specification is concise and adheres to Vega-lite rules

Vega-lite and Altair



Concise syntax that is understood by Altair

Altair then renders interactive visualization

Vega-lite Functionality

Data transformations

Visual transformations

Composition

Interactivity

Data Transformations



Aggregation

Binning

Filtering

Sorting

Visual Transformations



Stacking

Faceting

Composition



Combine specifications

Layered displays

Multi-view displays

Demo

Getting started with Altair charts

Demo

**Creating basic plots in Altair to
explore data**

Demo

**Visualizing binning and aggregation
results in Altair**

Demo

**Building interactive visualizations in
Altair**

Introducing Plotly

Plotly

Plotly, also known by its URL, Plot.ly, is a technical computing company headquartered in Montreal, Quebec, that develops online data analytics and visualization tools.

Wikipedia

Plotly

Plotly



“Business Intelligence”

“Data Science & Open Source”

“Platforms”

Chart Studio

Dashboards & Reporting

Slide Decks

Dash

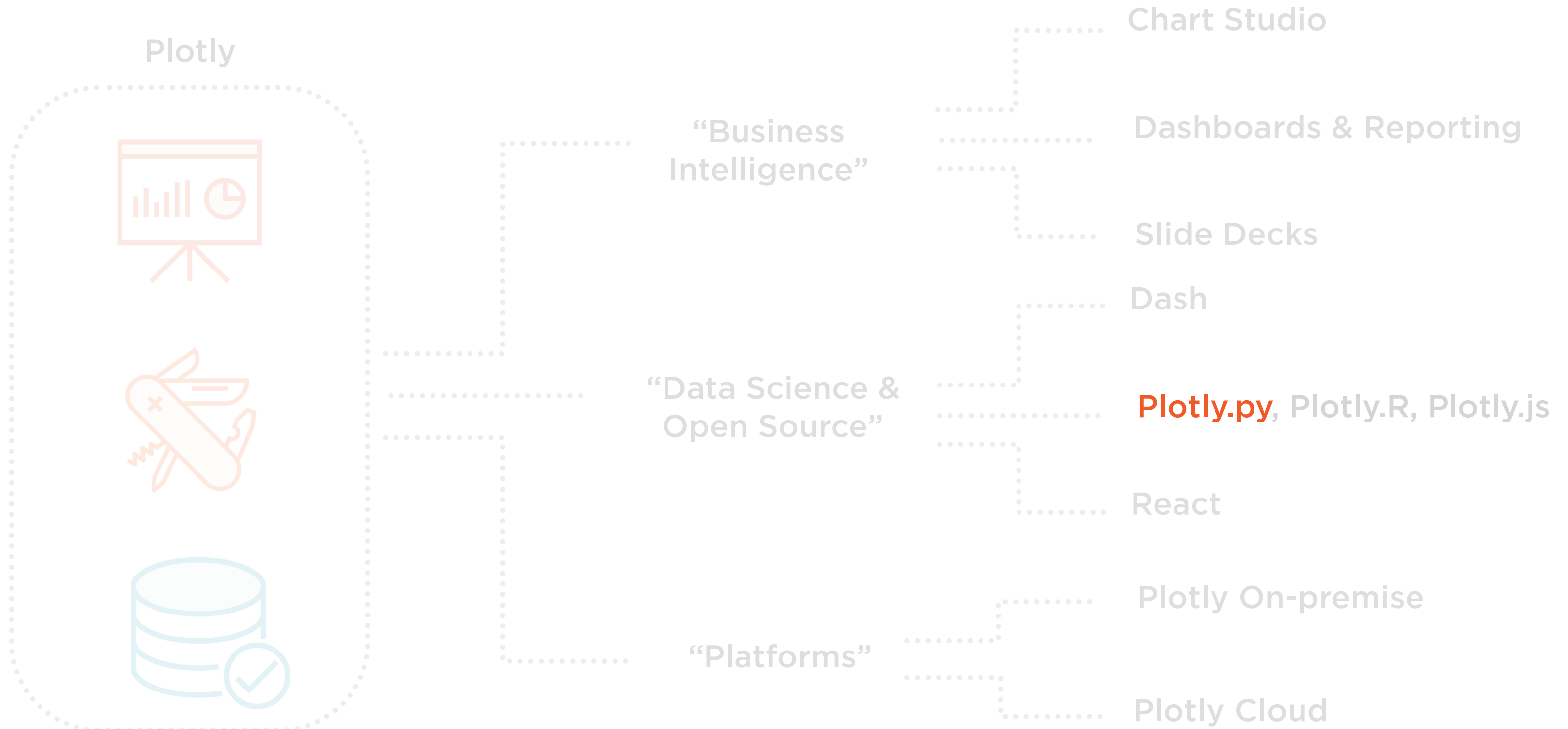
Plotly.py, Plotly.R, Plotly.js

React

Plotly On-premise

Plotly Cloud

Plotly



Plotly.py

Plotly's Python graphing library makes interactive, publication-quality graphs online.

plot.ly/python

Plotly



Under the hood, each plotly graph is a JSON object

Elements of a Plot

Data

List object in python which contains the traces

Layout

Object that defines the look of the plot

Figure

Final object to actually be plotted

Demo

**Building interactive visualizations in
Plotly**

Demo

**Viewing geographical data using
bubble maps in Plotly**

Summary

Building interactive visualizations in Python

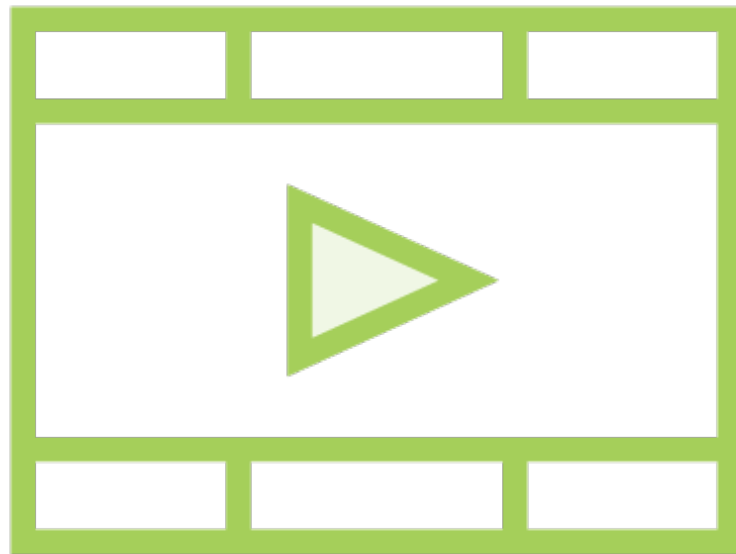
Zooming, panning and using tooltips

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Related Courses



**Interpreting Data Using Statistical
Models with Python**

Communicating Data Insights