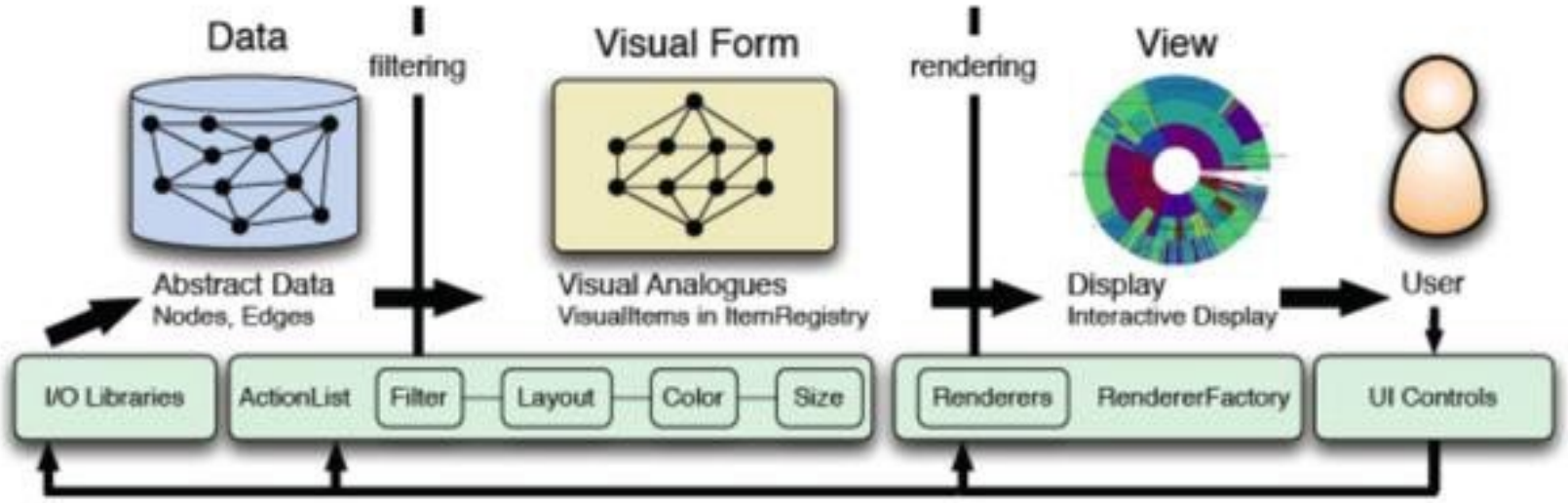
SOFTWARE SELECTION

PRESENTATION AND VISUALIZATION – MIREIA RIBERA

DATA SCIENCE MASTER DEGREE

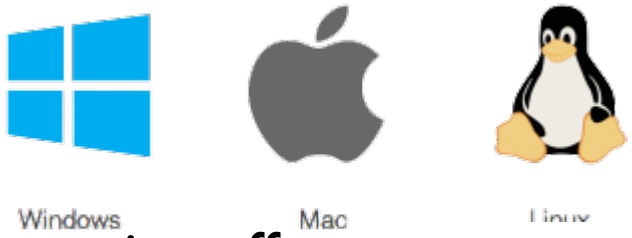
2 WHAT SOFTWARE IS PERTINENT?



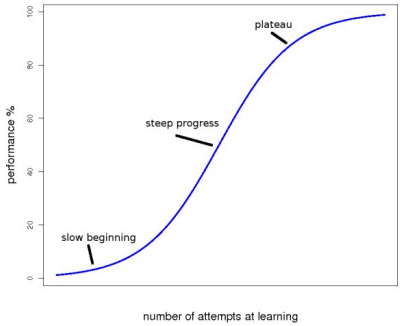
- Out-of-the-box tools vs Programming tools
- Complementary tools

3 CRITERIA

- Platform



- Learning effort
  - Languages
  - Workflow
  - Documentation



- Power / Interaction
  - See gallery
- Output
  - SVG, Web
- Sustainability
  - Adoption / Updating
  - Price and privacy

4 OUT-OF-THE BOX

They can help you explore your data quickly and easily. They offer less flexibility. Sometimes they don't fit your needs

5 OUT-OF-THE BOX: EXCEL

- Well-known and simple to use, highly adopted
- Demos available for basic charts
- Good for getting an initial taste of data and for quick and cheap charts

6 OUT-OF-THE BOX: TABLEAU

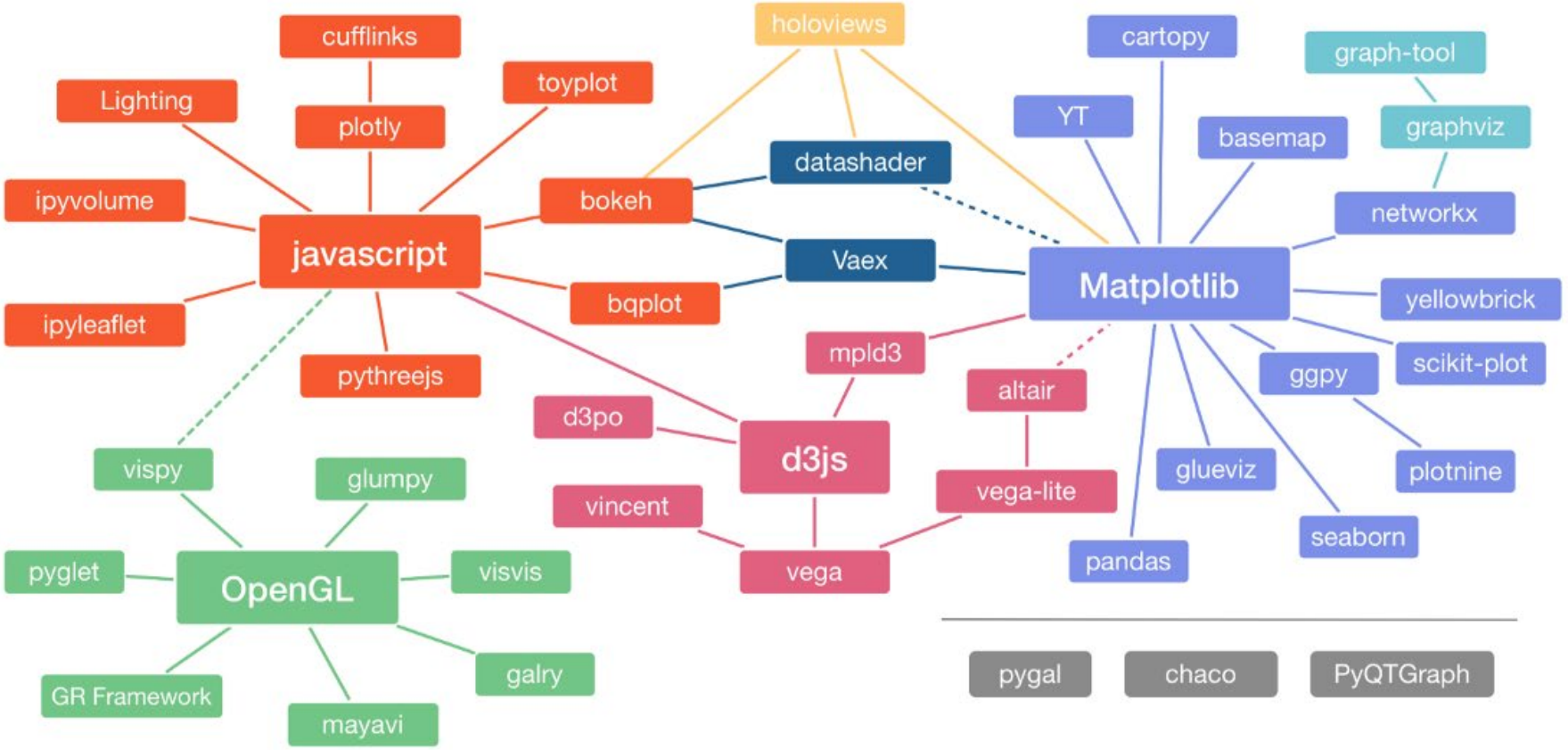
- Mainly designed to explore and analyse data visually
- Good at importing data and presenting it
- Very easy to start. Taking into account best practices for visualization. Quite powerful
- Public tableau (free) means making your data public
- Desktop version not cheap. Free for students and professors during 1 year

7 PROGRAMMING TOOLS

Programming can help you get a lot done with few effort, you can include the visualization in your data workflow

- Python
- R
- Javascript

8 PROGRAMMING: PYTHON



Source: https://sophiamyang.medium.com/python-visualization-landscape-3b95ede3d030

9 PROGRAMMING: R

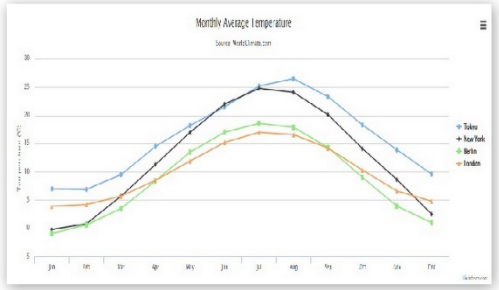
- Statistical programming language widely used among mathematicians
- Visualization only a part. Nathan Yau has written lots of tutorials
- You can manipulate data and quickly comb your dataset
- Not very good with interactive graphics and animations
- ggplot2

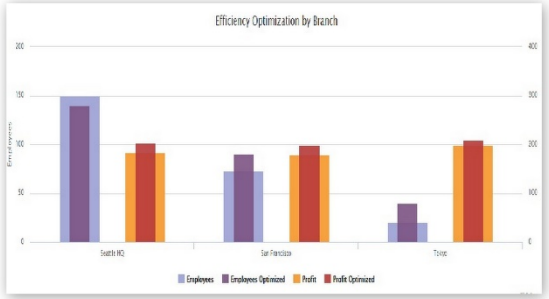
10 PROGRAMMING: JAVASCRIPT, D3

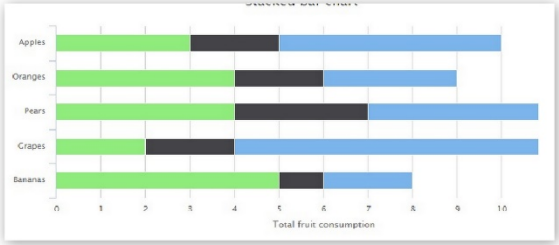
- JavaScript library for manipulating documents based on data
- Very good for interactive and web-native graphics
- Steep learning curve but many examples to start from
- The **most powerful**
- As alternatives: C3, Vega and Vega-Lite

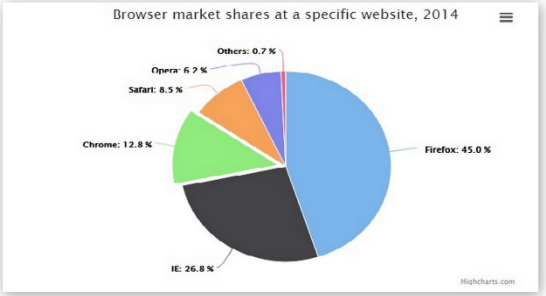
11 PROGRAMMING: JAVASCRIPT, HIGHCHARTS

- JavaScript library for quick and good-looking charts
- Easy and powerful
- Taking into account accessibility
- Well adopted and growing up









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COMPLEMENTARY TOOLS

Maps, networks and graphic design

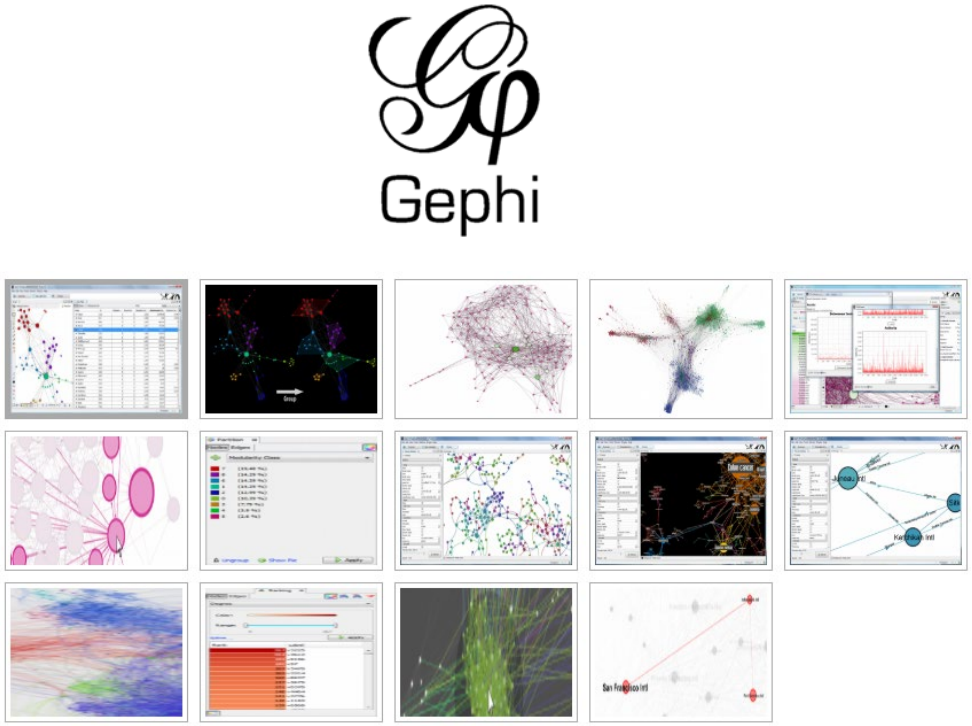
13 MAPS

- Mapbox
  - Easy and powerful
  - Now integrated in Tableau
  - On a paid basis
- Leaflet
  - Quite flexible
  - You can use it as a layer for your visualization
  - The tool of choice
- Google maps
  - The most updated

- OpenStreetMap
- The main open source for address information

14 NETWORKS

- Gephi
  - Open source and free
  - Well adopted and updated
  - The tool of choice for all kinds of graphs and networks



15 GRAPHIC DESIGN SOFTWARE

ADOBE

- InDesign: To create complicated layouts both digital and in paper
- Photoshop: The main graphic editing tool

OTHERS

- GIMP: the open software Photoshop alternative. Very powerful as well.
- Inkscape: to work with SVG
- Canvas: for social network`s

16 OPENGL GRAPHICS LIBRARY

- Better for really big data and quick answer time
- Pros
  - power and flexibility, complete control for graphics
  - hardware acceleration
  - many language bindings: C, C++, Java
- Cons
  - steep learning curve
  - Low level

THANK YOU

Questions?