An Overview of D3.js Based Charting Libraries and tools!

Kristina Durivage
@gelicia

Why Not **Just** D3?

D3 is a **data binding library**

Standard "don't repeat yourself" problems

http://gelicia.com/d3metaLibPresent/d3.html

http://tributary.io/inlet/6951394

- **Three scales** for dynamic height/width/color
- **rangeRoundBands** for dynamic spacing
- **.ticks()** for automatic background y labels

76 lines of code

Compared to...

http://gelicia.com/d3metaLibPresent/nvd3.html

More stuff than the d3 version

Automatic window resizing

23 lines of code

- **Pros**
  - Much faster development
  - Built in polish
- **Cons**
  - D3 is more universal
  - Dependent on / limited by the library
  - Data usually has to be structured a certain way

Reusable Charts

D3 written for people to make reusable charts
http://bost.ocks.org/mike/chart/

Also a book about it http://bleedingedgepress.com/our-books/developing-a-d3-js-edge/

Charting libraries are people implementing this idea in their **own way,** with their **own rules**

https://github.com/novus/nvd3/tree/master/src/models

vs

http://misoproject.com/d3-chart/charts.html

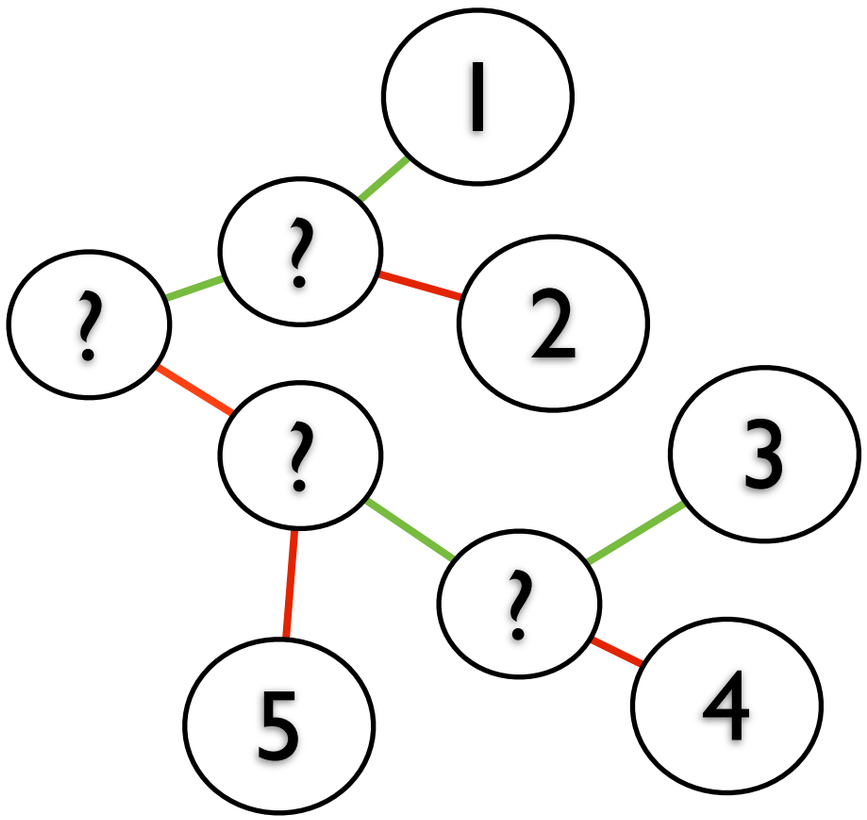
What's the **focus** of the library?

Who's **responsible** for maintenance?

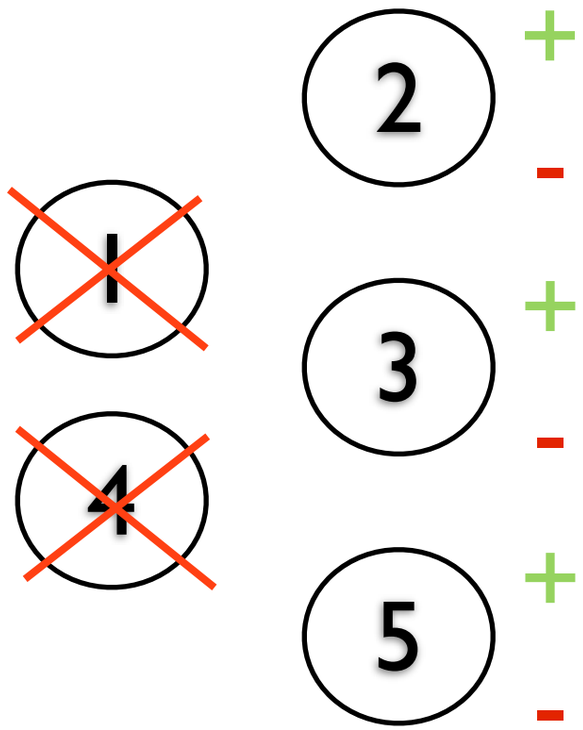

Crest
Colgate
Total
WHITE
MaxFresh
MaxWhite
MaxClean
Cavity Protection
Tartar Protection
LUMINOUS
AdvanceWhite
PeroxiCare
CLOSE-UP
Ultrabrite
Aim
bonus
Save even more on gas.

Planning This Talk

How I **Thought** it Would Go



What It **Actually** Was



- **Programming** (24)
  - Open Model (1)
  - Closed Model (6)
  - Specialized Charting (9)
    - Time-series (4)
    - Dashboards (3)
    - Networks (1)
    - Polar (1)
  - General programming (2)
  - Inter-language support (6)
- **Web Applications** (8)
  - General (6)
  - Specialized (2)

31!

(one repeat)

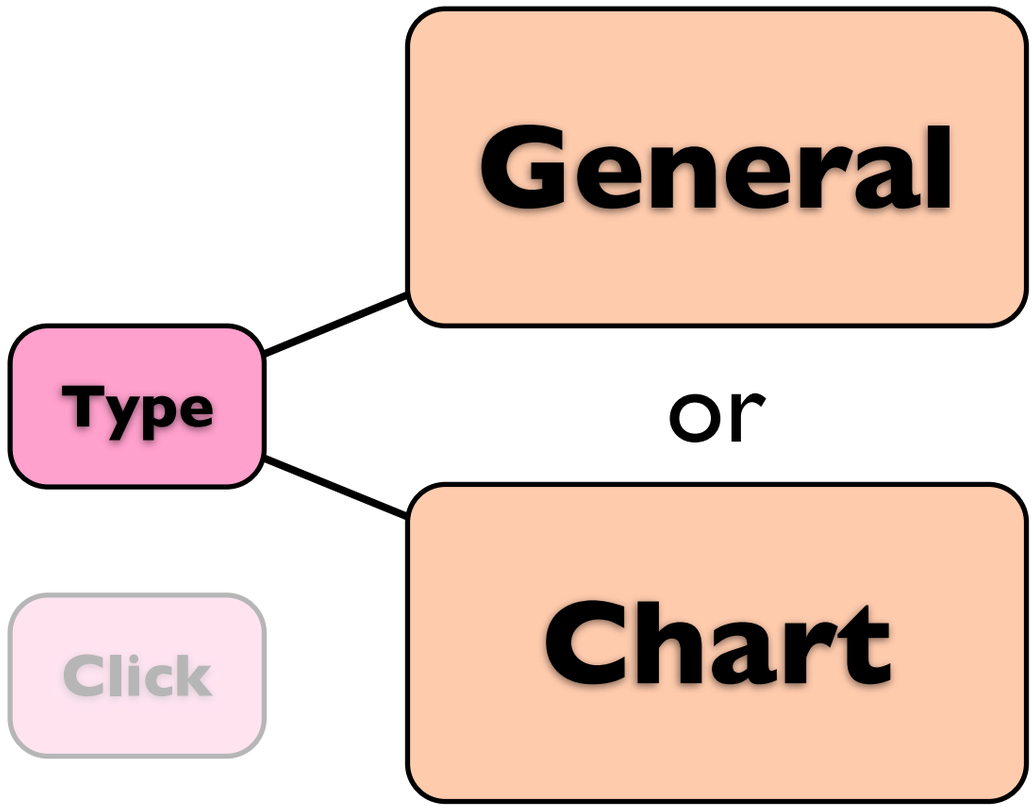
First decision:

Type

or

Click

Second decision:



Programming > General

- **DVL**
  - Tighter data binding - dependent variables are updated automatically
  - https://github.com/vogievetsky/DVL
- **D3-light**
  - Lightweight fork of D3 built for a webapp
    - Limited features, added IE compatibility, better localization, reduced size to 21k
  - https://github.com/datawrapper/d3-light/

Third decision:

Inter-language support

or

Type

Chart

Click

General

Specialized Use

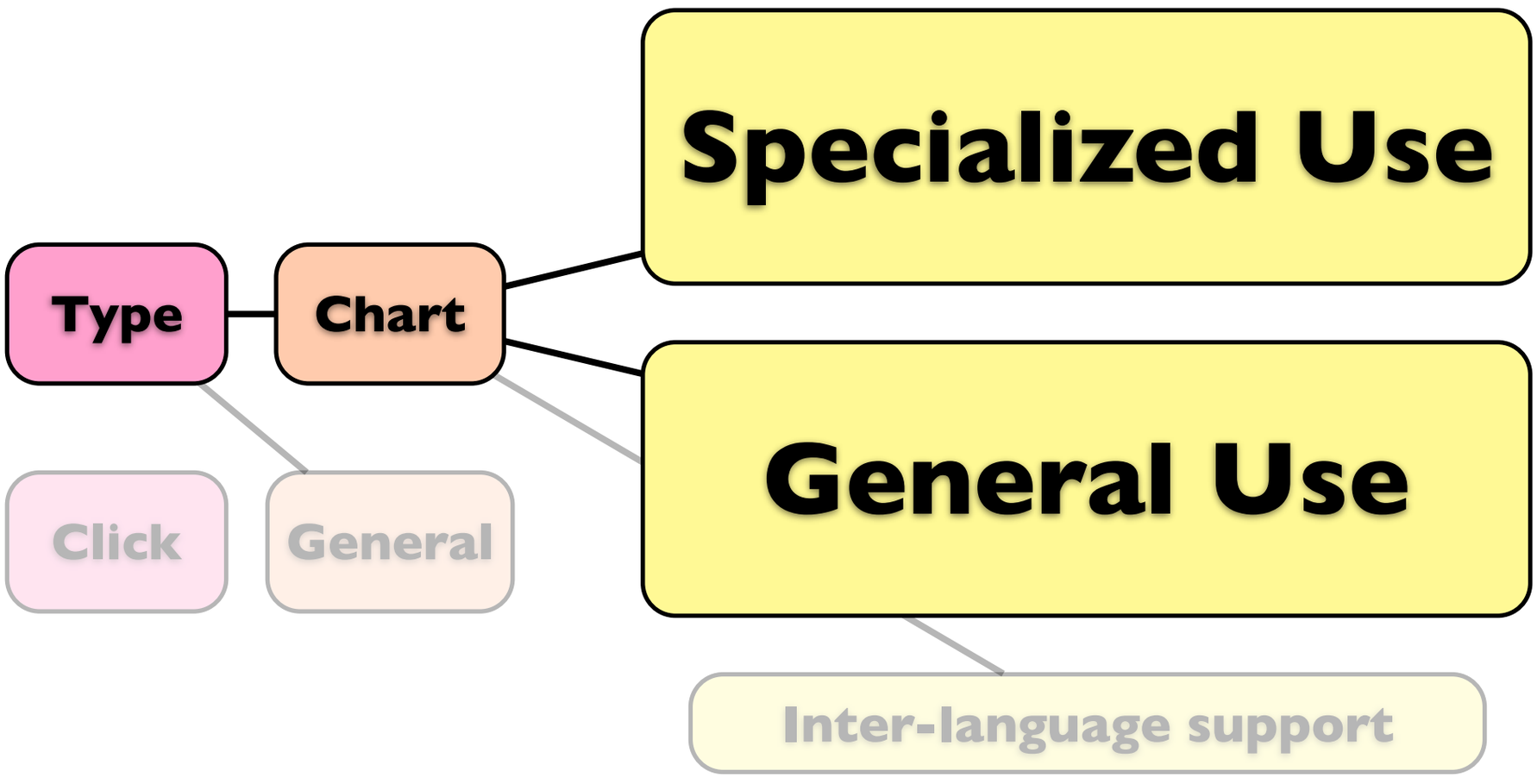
or

General Use

Chart > Inter-language support

- **Vega** - JSON to D3 to chart
  - http://gelicia.com/d3metaLibPresent/vega.html
  - http://trifacta.github.io/vega/
- **Dvis -** HTML to D3(sparklines) to chart
  - https://github.com/akngs/dviz
- **rCharts -** Export R to D3 to chart
  - http://ramnathv.github.io/rCharts/
- **ggPlots** - ggplot2 (R) ideas implemented in Javascript that generate charts
  - Hack week project
  - https://github.com/gigamonkey/gg
- **Dangle** - Angular directives for visualizations
  - http://www.fullscale.co/dangle/
- **Dance.js** (?) - D3 ideas with backbone.js style?
  - None of the examples work, last commit was a year ago
  - https://github.com/michael/dance

Third decision:



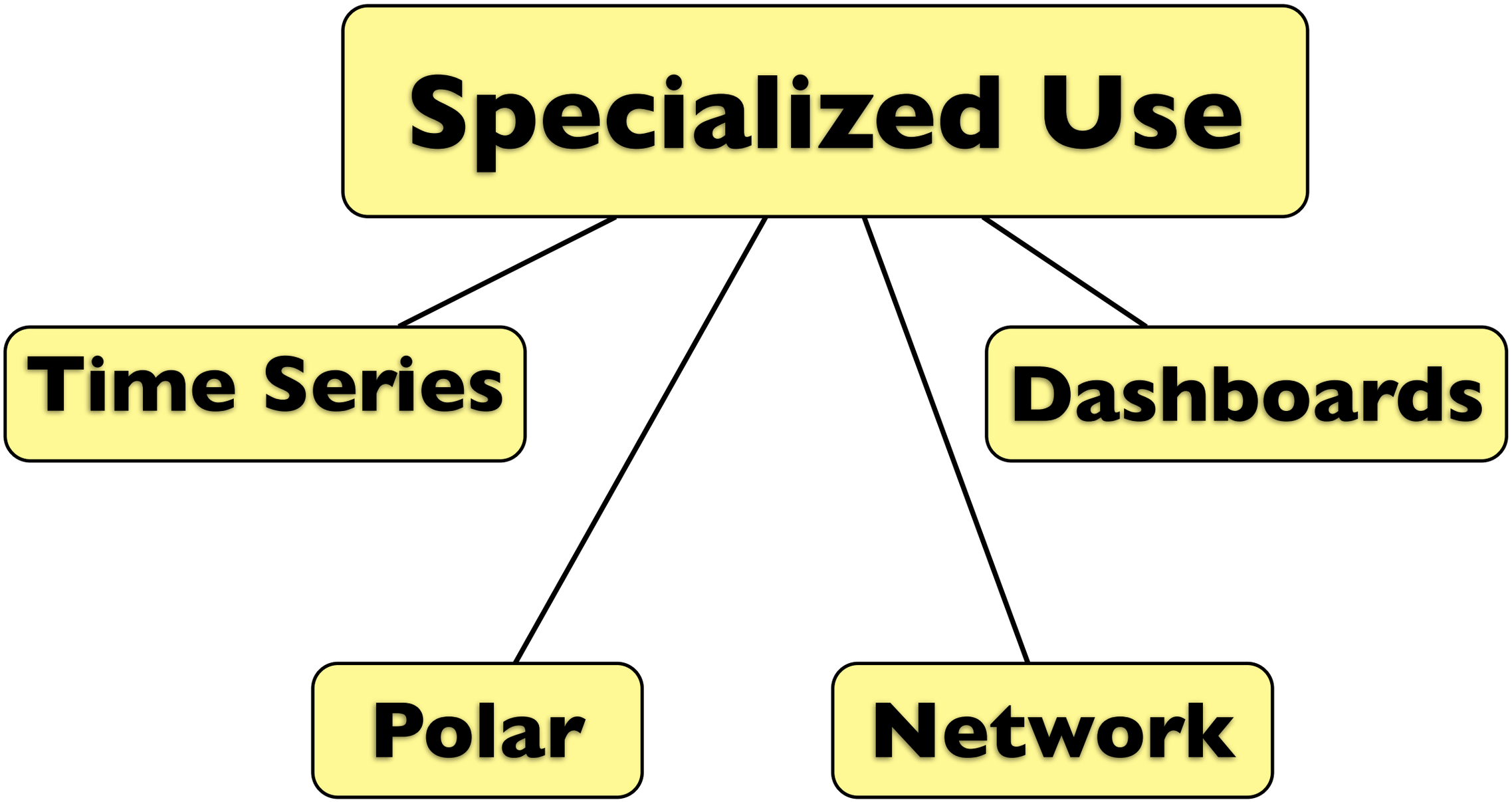

Specialized Use
Time Series
Dashboards
Polar
Network

Chart > Specialized Use > Time Series

- **Rickshaw**
  - Several configurations (line, area, bar, scatter)
  - Can be used for real time data
  - Popular, http://stackoverflow.com/tags/rickshaw/info
  - http://code.shutterstock.com/rickshaw/
- **Cubism**
  - Meant for real-time server monitoring
  - Uses canvas and just shifts pixels back, very efficient
  - http://square.github.io/cubism/
- **Glimpse.js**
  - Plans to expand to more than just time-series
  - http://racker.github.io/glimpse.js-website/
- **Dynamic Charts**
  - Meant for realtime, dynamic data
  - Has a neat, circular chart type
  - A few examples, only javadoc type documentation
  - https://github.com/mlarocca/Dynamic-Charts

Chart > Specialized Use > Networks

- **JSNetworkX**
  - Javascript port of the Python library NetworkX
  - http://felix-kling.de/JSNetworkX/index.html

Chart > Specialized Use > Polar

- **Micropolar**
  - Polar chart library
  - http://micropolar.org/
  - https://github.com/biovisualize/micropolar

Chart > Specialized Use > Dashboards

- **dc.js**
  - Specialized for multi-dimensional data
  - Bar, pie/donut, row, line, and more
  - Popular!
  - http://nickqizhu.github.io/dc.js/
- **Graphene**
  - Time-series and gauges
  - http://jondot.github.io/graphene/
- **Dashku**
  - Included this as a webapp also
  - Program widgets yourself, position them within a webapp
  - Comes with server scripts to get realtime data in
  - https://dashku.com/

Third decision:

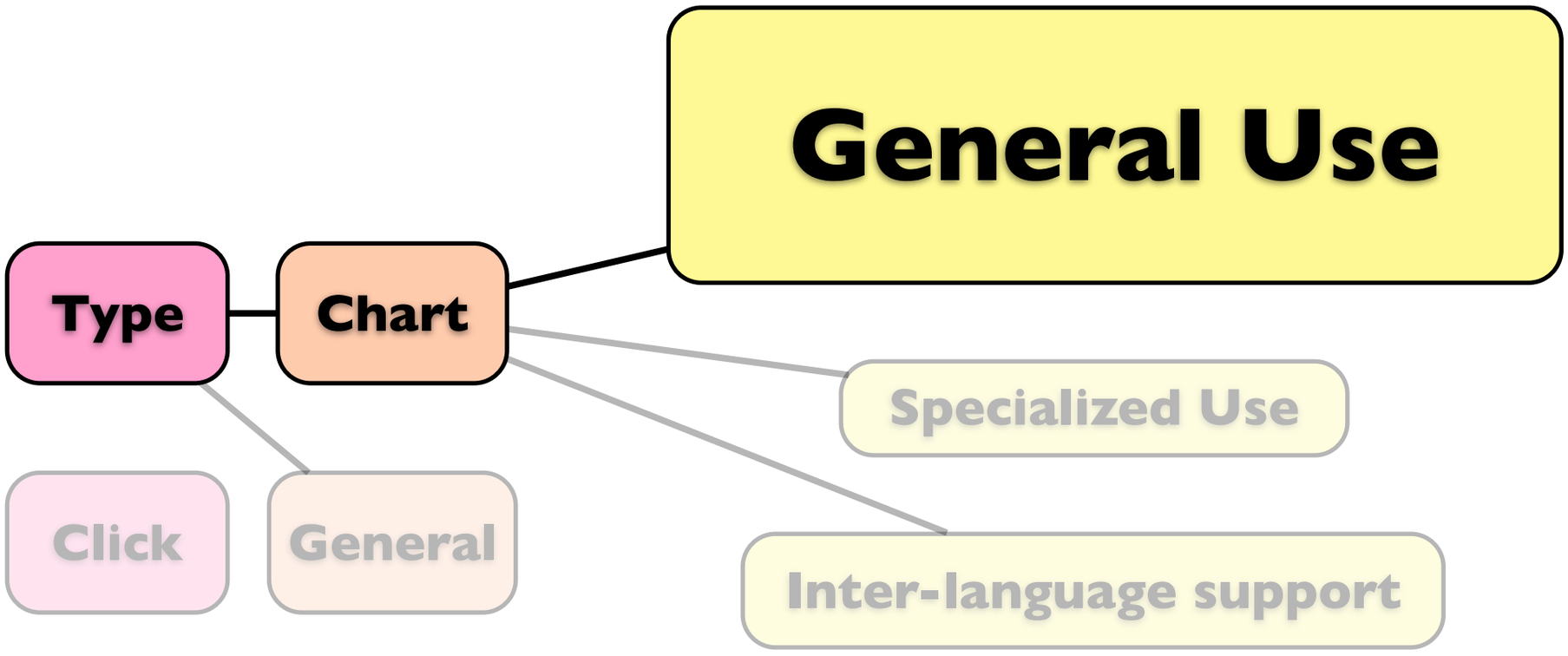


Chart > General Use (Part 1)

- **NVD3**
  - Most popular http://stackoverflow.com/questions/tagged/nvd3.js
  - http://gelicia.com/d3metaLibPresent/nvd3.html
  - http://nvd3.org/
- **xCharts**
  - Requires data to be in an x, y format
  - http://gelicia.com/d3metaLibPresent/xcharts.html
  - http://tenxer.github.io/xcharts/
- **DexCharts**
  - Development has picked up again
  - http://gelicia.com/d3metaLibPresent/dexcharts.html
  - https://github.com/PatMartin/DexCharts

Chart > General Use (Part 2)

- **Dimple**
  - Will have to flatten JSON
  - http://gelicia.com/d3metaLibPresent/dimple.html
  - http://dimplejs.org/
- **uvCharts**
  - Really good documentation on their site - wish it was in the github wiki as well
  - http://gelicia.com/d3metaLibPresent/uvCharts.html
  - http://imaginea.github.io/uvCharts/
- **Virtual Sedimentation**
  - Special style - uses 2d physics to show how data changes
  - http://www.visualsedimentation.org
  - http://www.visualsedimentation.org/examples/sedivn/sedivn.html#

Chart > General Use > Reuse template

- **d3.Chart**
  - More of a framework for building reusable charts
  - Not a really fair example - using this template would be much shorter
  - http://gelicia.com/d3metaLibPresent/d3-chart.html
  - http://misoproject.com/d3-chart/

Your Situation

Basic chart

Styling requirements are **flexible**

Library's **functionality** is **in scope**

No scope creep

No direct **D3.js**

Something more mature?
NVD3

Something newer?
Dimple.js

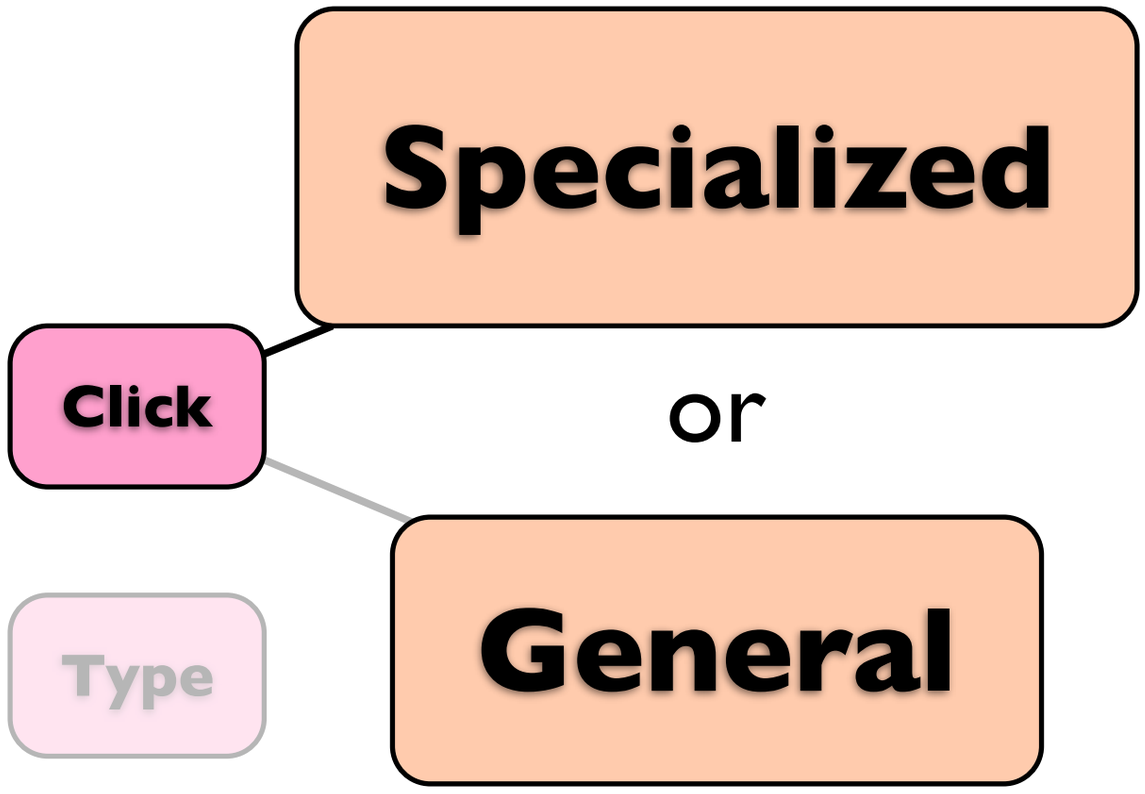
Okay, done with typing...

First decision:

Click

Type

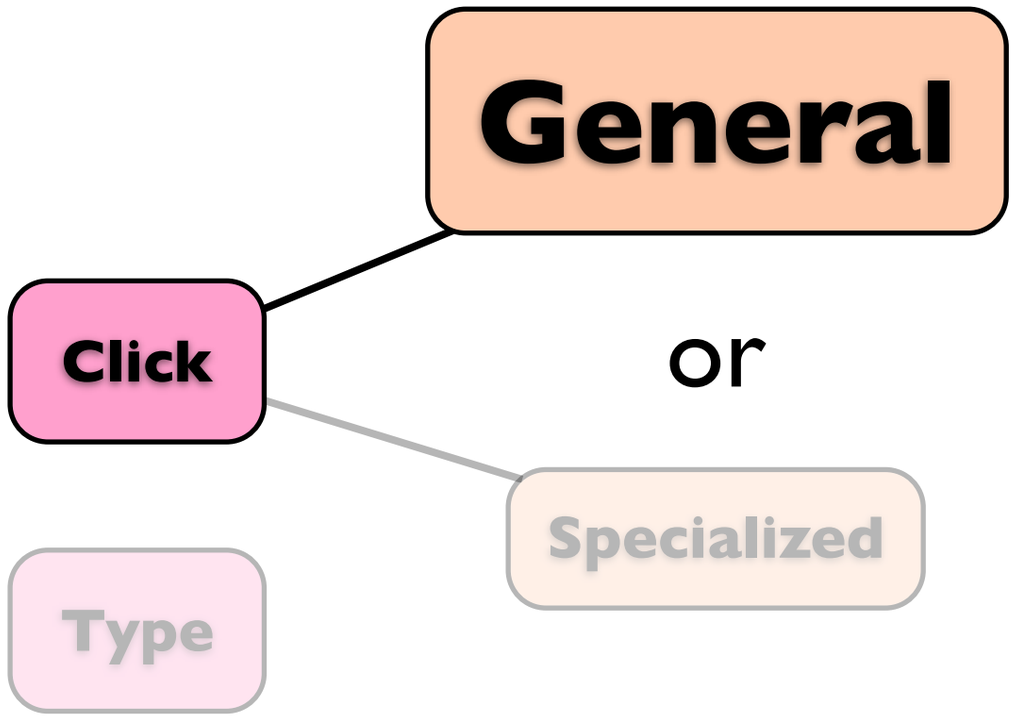
Second decision:



Web App > Specialized Use

- **CodeFlower**
  - Visualize source repositories
  - Generate JSON based on instructions, copy/paste it into the site for a network of the repository
  - http://redotheweb.com/CodeFlower/
- **Tulip**
  - Generate a chloropleth map by copy/pasting GeoJSON or TopoJSON
  - Export it as PNG or JPEG
  - http://code.minnpost.com/tulip/

Second decision:



Web App > General Use (Part 1)

- **Datawrapper**
  - Copy/paste TSV or CSV, make sure the data is correct, select a chart type
  - Need to sign up for an account to embed a chart
  - http://datawrapper.de
- **d3-generator**
  - Bar chart only generator
  - Exports out Javascript and HTML to copy/paste in a site
  - http://d3-generator.com/
- **polychart**
  - Taps into mySQL, PostgreSQL, Google Analytics, Salesforce, CSV, etc to make a dashboard
  - Free to use, pay to host it yourself
  - https://www.polychart.com/

Web App > General Use (Part 2)

- **Dashku**
  - Included this one twice - you need to code to create/alter widgets, but drag and drop to position and size them
  - No export
  - https://dashku.com/
- **raw**
  - Copy/paste CSV, define the type of chart and metrics
  - Export as SVG, PNG or JSON
  - http://raw.densitydesign.org/
- **vida.io**
  - Choose a chart type, import a CSV. It generates the stylesheet and Javascript for you
  - Embed or share, or take the Javascript.
  - The site has a community feature to show visualizations
  - http://vida.io/

Stay Updated!

https://twitter.com/d3visualization

http://christopheviau.com/d3list/gallery.html

https://twitter.com/DashingD3js

Articles

http://mgrafit.tumblr.com/post/54916323558/d3js-meta-libraries-a-contrasted-landscape

http://mikemcdearmon.com/portfolio/techposts/data-visualization-base-on-d3-js

http://mikemcdearmon.com/portfolio/techposts/charting-libraries-using-d3

https://github.com/gelicia/d3metaLibPresent

http://gelicia.com/d3metaLibPresent/

(check back there tonight)

@gelicia

http://speakr.cc/#talks/289