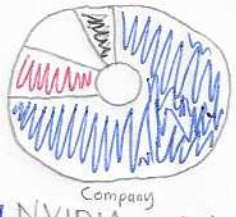
IDEAS

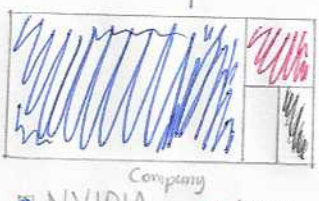
① Steam Users' GPU Distribution

1a Donut Chart



NVIDIA AMD Intel Others

1b Treemap



NVIDIA AMD Intel Others

1c Waffle Chart

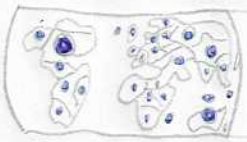
NVIDIA AMD Intel Others

② Steam Users by Country

2a Choropleth Map

Steam Users per 10,000 population

2b Proportional Symbol Map

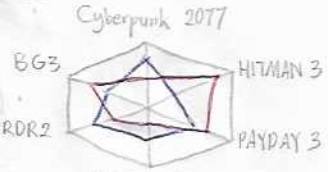


Steam Users

<500k 500k - 1M 1M - 2M >2M

③ Flagship GPU Comparison

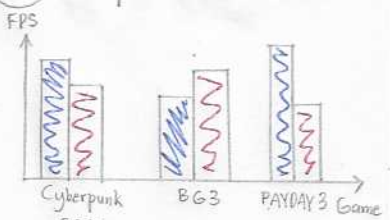
3a Radar Chart



Graphics Card

RTX 4090 RX 7900 XTX

3b Grouped Bar Chart



Graphics Card

RTX 4090 RX 7900 XTX

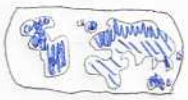
FILTER

Steam Users' GPU Distribution

Waffle Chart

- Easy to make in Vega-Lite.
- Compact design which reduces clutter

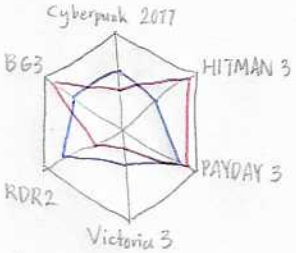
Steam Users by Country →



Choropleth Map

- Well-suited for identifying trends across regions
- Using area is more familiar to the reader.
- No need to worry about aggregation areas.

Flagship GPU Comparison →



- Well-suited for multivariate data comparison
- Compact design which reduces clutter
- Very effective for small datasets as only 2 GPUs are compared

CATEGORIZE

Steam Users by Country → Steam Users GPU Distribution → Flagship GPU Comparison

COMBINE AND REFINE

The proportional symbols from the Proportional Symbol Map could be overlaid on top of the Choropleth Map, effectively combining both to improve the Choropleth Map as size is a more effective visual channel than colour saturation.

QUESTIONS

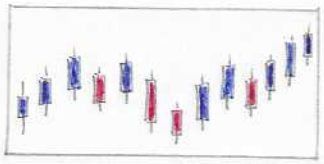
① Does this visualization effectively showcase why Steam users prefer NVIDIA's GPUs, and how the distribution of Steam users across the world is a way for NVIDIA to identify emerging markets for their GPUs, and why they would triumph in these emerging markets over their competitors?

② Instead of combining charts, maybe it might be less messier to have a button to navigate between the 2 charts?

③ Would a Radar Chart be too difficult to implement? In which case, should alternatives like 3b be considered instead?

④ NVIDIA Stock Price

4a Candlestick Chart



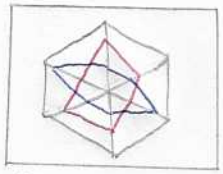
LAYOUT

Why Steam Users prefer NVIDIA Graphics Cards

Steam Users by Country

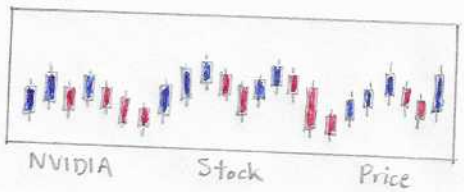
Explanation Body

Steam Users GPU Distribution



Flagship GPU Comparison

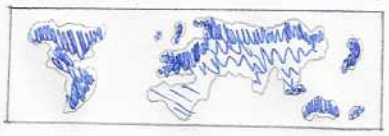
Explanation Body



NVIDIA Stock Price

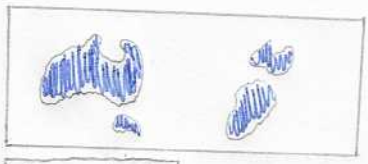
OPERATIONS

Zoomable Choropleth Map



World
Europe
Asia
Oceania

Select a continent to focus on



Oceania

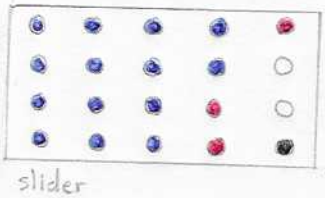
Steam Users GPU Distribution

slider

2024

slider to change year

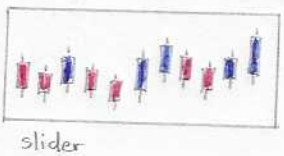
Steam Users GPU Distribution



slider

2022

NVIDIA Stock Price

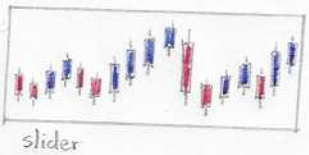


slider

2019 2024

slider to change the year range

NVIDIA Stock Price



slider

2021 2024

Title: Balanced Partitioned Poster

Author: Kerk Han Chin

Date: 22/9/2024

Sheet: 2

Task: Design a scrollable partitioned poster to tell a story.

FOCUS

- Waffle Chart
  - → Points are coloured in proportion to the GPU Share of each Company
  - → Company with the largest share is highlighted in green whilst the rest are in grey.
- Candlestick Chart
  - → x-axis: Date, y-axis: Stock Price ($)
  - → Date of new GPU releases are highlighted using line annotations
- Choropleth Map
  - → Countries with the most Steam users per capita are highlighted via text annotations
  - → Proportional Symbol Layer aids in effectively conveying magnitude

DISCUSSION

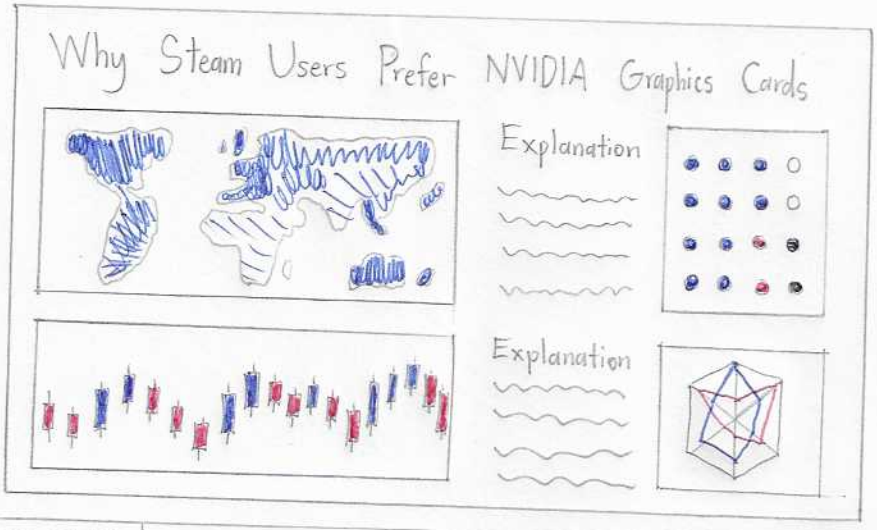
Advantages

- Easy for the reader to follow and understand the narrative due to top-down, left-right structure.
- Good degree of user interactivity via zooming, scrolling, & sliding.
- Balanced and symmetrical layout clearly structured into columns/rows which ensures it is aesthetically pleasing.

Disadvantages

- Scrolling takes a lot of time which may bore the user.
- Candlestick Chart may be difficult to interpret.
- Filtering will be difficult to implement and time-consuming.
- Long-form design may induce viewer fatigue and cause viewers to lose interest before reaching the end.

LAYOUT



Title : Compact Wide Dashboard Visualization

Author : Kerk Han Chin

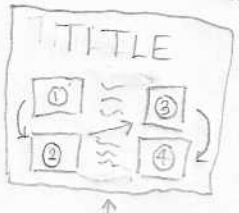
Date : 23/9/2024

Sheet : 3

Task : Design a compact dashboard visualization with a wide layout to tell a story and present my findings

FOCUS

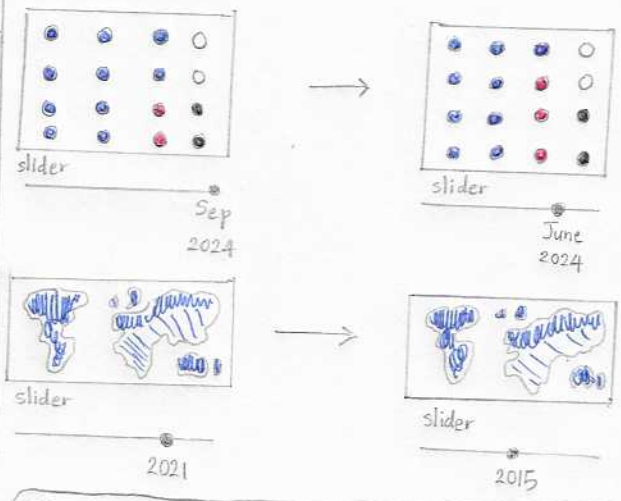
- The focus is on the choropleth map and candlestick chart to emphasize the narrative link between Steam's user base being concentrated in high-income nations and how the high^ disposable incomes of such Steam users enabled high sales of NVIDIA GPUs and its resulting skyrocketing financial success. These charts indicate results or phenomena.
- The Waffle and Radar Chart are given smaller sizes to de-emphasize their importance in terms of visual hierarchy relative to the 'phenomena' above. These charts work in-tandem to explain and link together the 'phenomena' and as such are 'cause' or 'connective' charts.



Visualization Arrangement

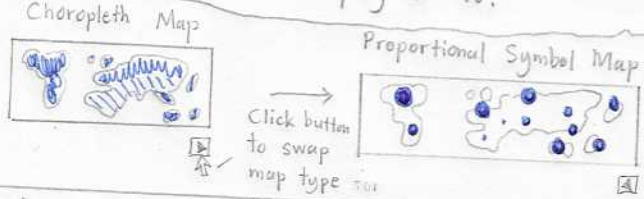
- The Viewing Path follows a top-down, left-right, column-by-column approach that displays the phenomena to the viewer first before presenting the causes and connective charts to link everything together.

OPERATIONS



Tooltips for Candlestick and Waffle Charts

- For Candlestick Chart, tooltips will display Open-Close, High-Low, and stock price for each date
- For Waffle Chart, tooltips will display GPU Share for that company in %.



DISCUSSION

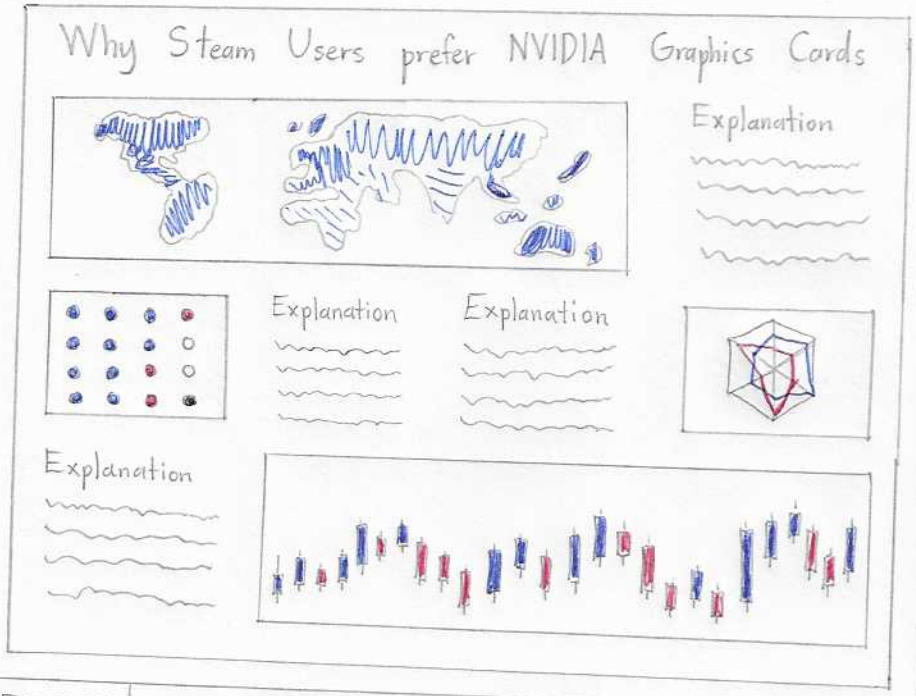
Advantages

- Compact design which allows the viewer to see all the important information at once.
- Balanced and symmetrical column-based layout that ensures sight lines are well-aligned to ensure pleasing aesthetics
- Chart sizes enable clear visual hierarchy to be established.

Disadvantages

- Will cause information overload for reader due to there being too much info at a glance
- Difficult for viewer to identify intended viewing path as they may read it row by row instead.
- Wide Dashboard may not be suitable for small and narrow screen resolutions.
- Interactive elements like sliders and buttons^ may create unnecessary sight lines.

LAYOUT



Title : 4 - Column Balanced Scrollable Dashboard Visualization

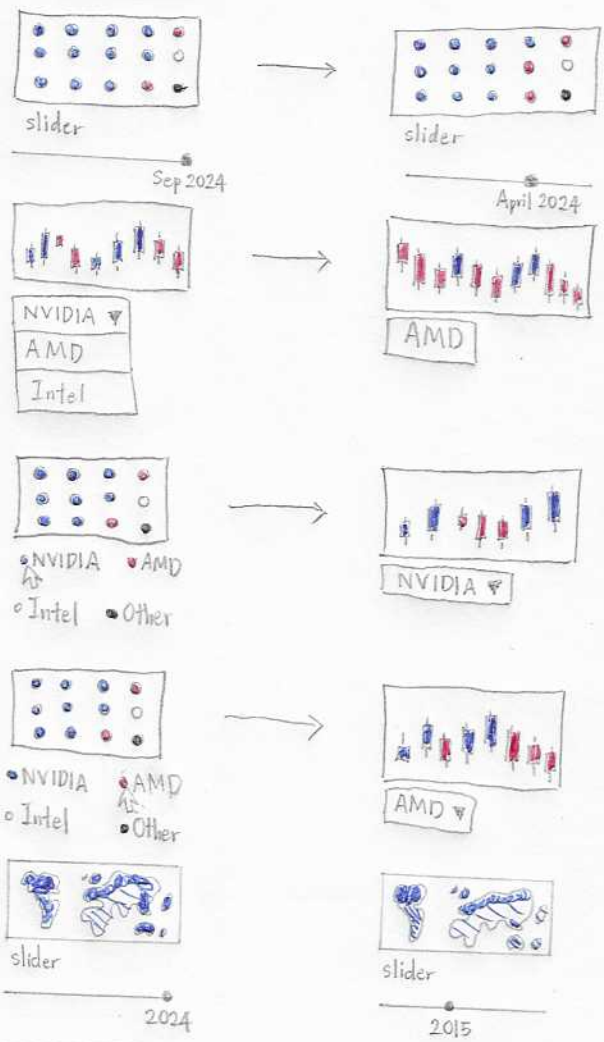
Author : Kerk Han Chin

Date : 23/9/2024

Sheet : 4

Task : Design a 4 - Column Dashboard - Style Visualization that's scrollable and balanced to tell a story.

OPERATIONS



FOCUS

- Main focus is on establishing a narrative link starting from the geographic distribution of Steam users to the skyrocketing financial success of NVIDIA, with Steam User GPU Distribution and a performance comparison of NVIDIA's flagship GPU with AMD's flagship GPU serving as connective explanatory tissue.
- The Choropleth Map and Candlestick Chart are significantly larger than the other idioms to establish their heavy importance in the visual hierarchy. but the addition of scrolling ensures the choropleth map is seen first as it is placed in the top-left where the Viewing Path begins.
- Consistent colour palette for NVIDIA is used throughout the visualization to establish a visual hierarchy and highlight NVIDIA as the 'figure'.

DISCUSSION

Advantages

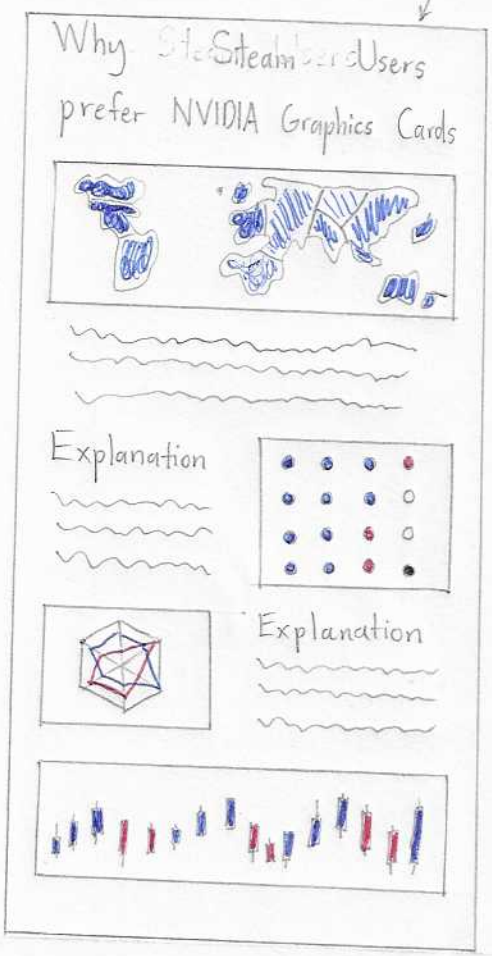
- 4 - Column Layout is balanced and symmetrical which ensures visualization is aesthetically pleasing
- Lower half of visualization can only be seen after scrolling which limits viewer information overload.
- Good amount of user interaction via filtering and scrolling.

Disadvantages

- Difficult to implement filtering and scrolling.
- Viewer may get fatigued and lose interest from having to scroll for too long
- Might be hard for viewer to identify the correct viewing order of elements due to wide layout
- Insufficient white space between elements due to cramped design may be unpleasant for viewers.

LAYOUT

Based on Sheet 2



Title: Final Design Sheet

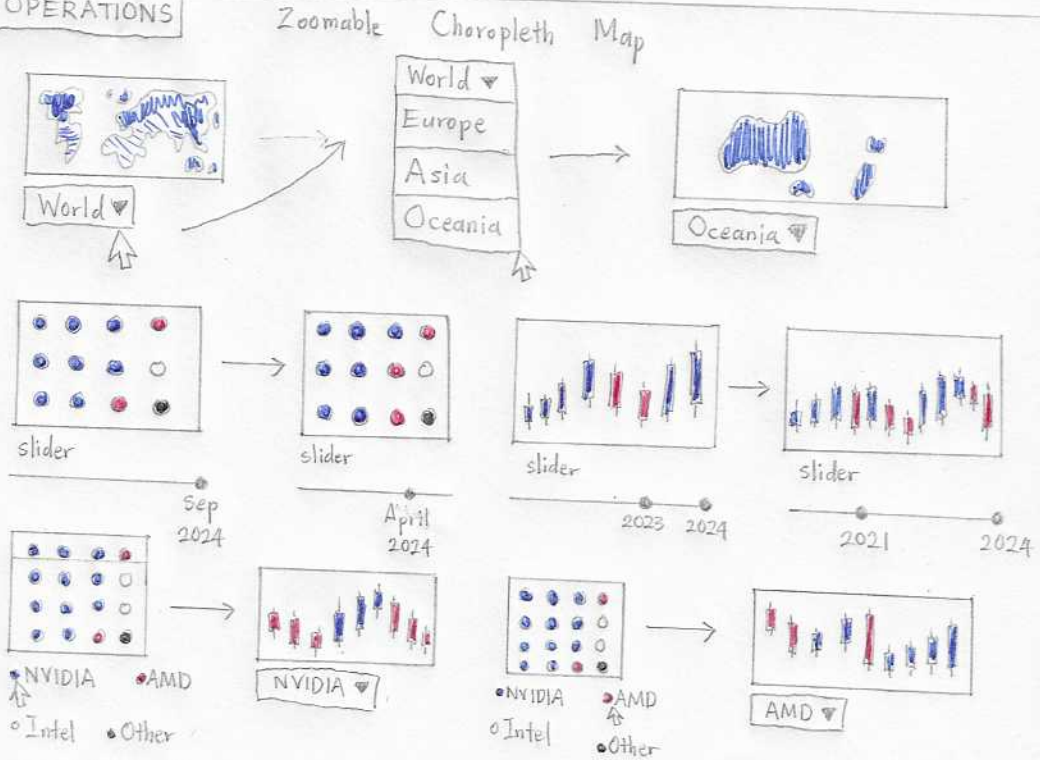
Author: Kerk Han Chin

Date: 24/09/2024

Sheet: 5

Task: Design the layout for the final implementation.

OPERATIONS



- Clicking Company in Legend also filters stock price data for that company

FOCUS

- Layout splits focus into 4 main sections corresponding to the 4 rows and with one section per chart.
- Tall scrollable design establishes a clear visual hierarchy by exploiting viewing path so that sections to be read first are further up.
- Choropleth Map introduces the first phenomena of Steam users' geographic distribution.
- Waffle Chart links this to NVIDIA whilst Radar Chart explains the Waffle Chart's findings
- Lastly, the Candlestick Chart shows the result/effects of this for NVIDIA financially.

DETAILS

- Software Requirements, Dependencies, and Algorithms
  - Vega-Lite will be used to construct the Choropleth Map, Waffle Chart, and Candlestick Chart.
  - Vega will be used to construct the Radar Chart
  - HTML, CSS, and Pure.CSS will be used to create the dashboard
  - Google Fonts will be used for font faces.
  - R will be used for data scraping the datasets alongside data cleaning and data wrangling, tidyr and dplyr packages and algorithms likely to be used.
- Estimated time to build the visualization: 2 weeks
- Estimated effort to build the visualization: Very High
- Hardware Requirements
  - Desktop PC to create visualization and pre-process data.
  - GitHub Pages to deploy the visualization.