Agenda for Today

Scattered Access to Data

Finance Data	M & A Activity Data	Economic / Trade Data

Key Challenges Include

- While financial data is readily available for most public companies, analyzing the impact of acquisitions or major product launches on corporate valuation or stock price isn't so straightforward

- As corporations have global operational footprints, it's hard to get a real grasp as an individual investor or researcher on the impact of global politics, and trade/ economic risks on particular organizations

First Draft Leveraging Tableau

Financial Performance

Shows stock value over the last 20 years against the Dow Jones Index
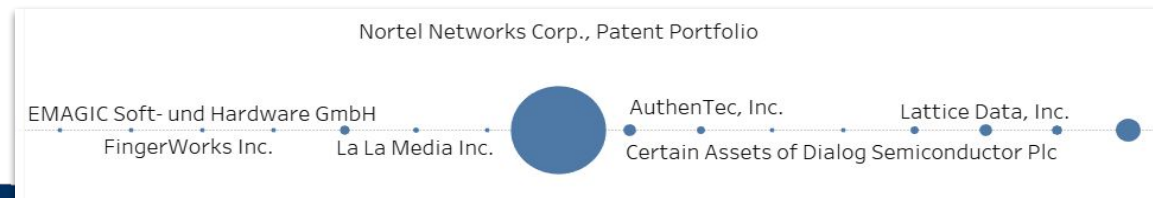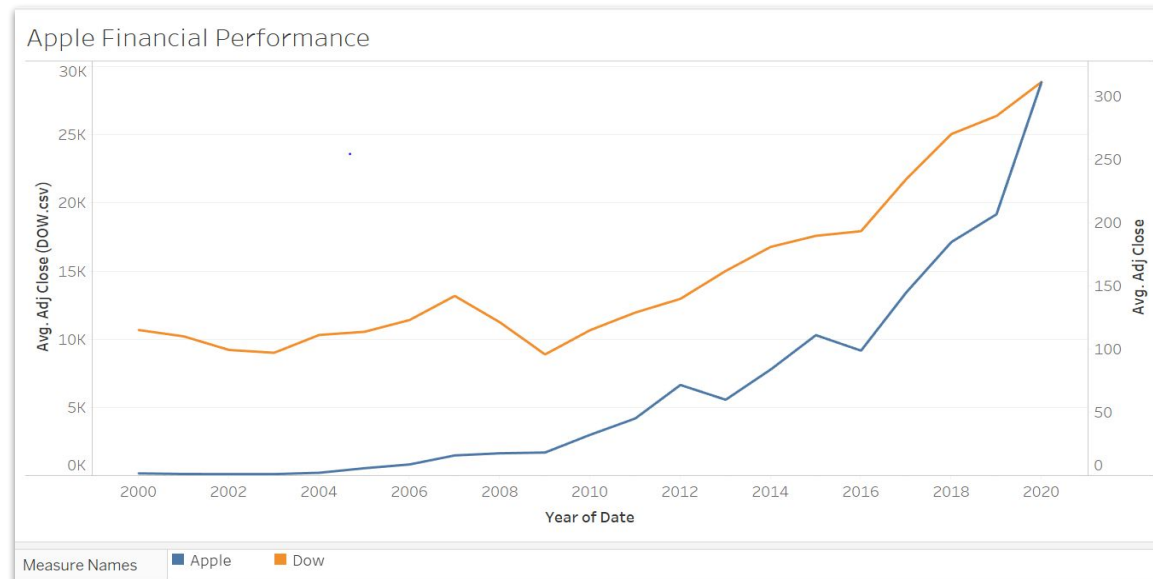
The corporate timeline includes major acquisitions over the last 20 years

Global Footprint
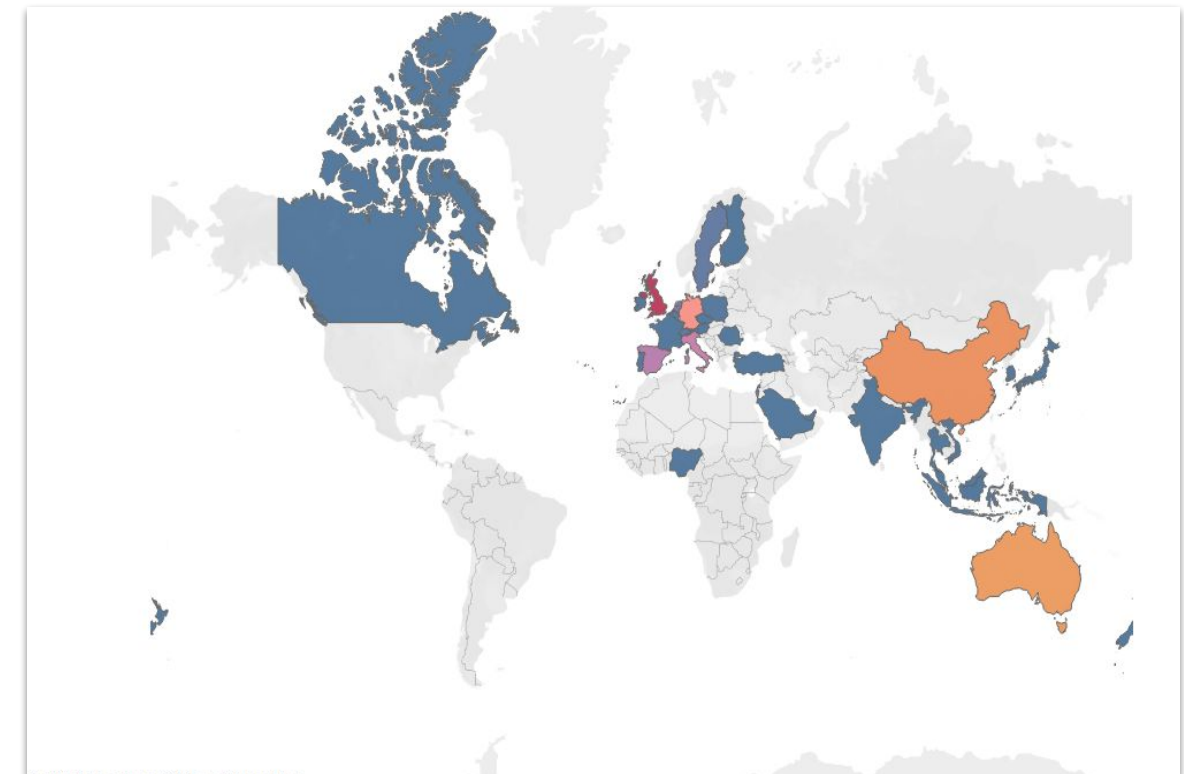
The operational footprint based on the number of subsidiaries across the world

First Draft Leveraging Tableau

Final Product Tool Stack

Switched to Dash by Plotly, built on top of D3.js

- Increased control over visualizations post data cleanup

- Ability to customize look and feel (Coded in Python)

- Ability to collaborate as a virtual team

- Better performance and scalability using to Pandas

Usability Testing Summary

9 Test Subjects Surveyed

55 Observations / Feedback Documented

17 Improvements Evaluated for Final Visualization
- **7   Must Have Issues**
- **8 Should Have Issues**
- **1   Could Have Issues**
- **1 Will Not Have Issues**

Usability Testing – Major Improvements
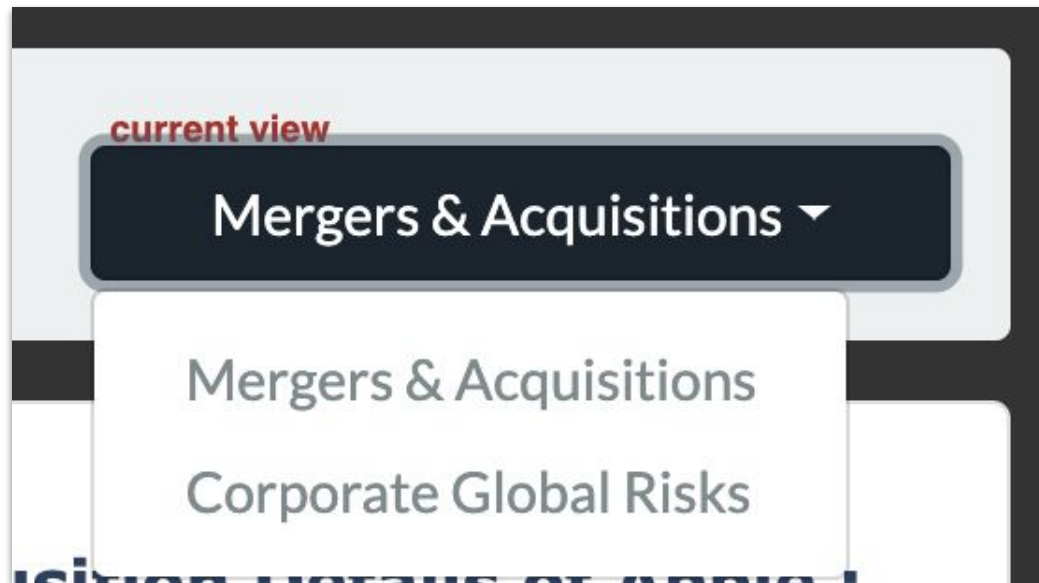
Splitting Out the Views

- **Issue:** Users were overwhelmed by the content on the screen and the amount of scrolling to move across all the visualizations

- **Solution:** Split out the 2 main components of our visualization: Financials/ M&A and Global Risks
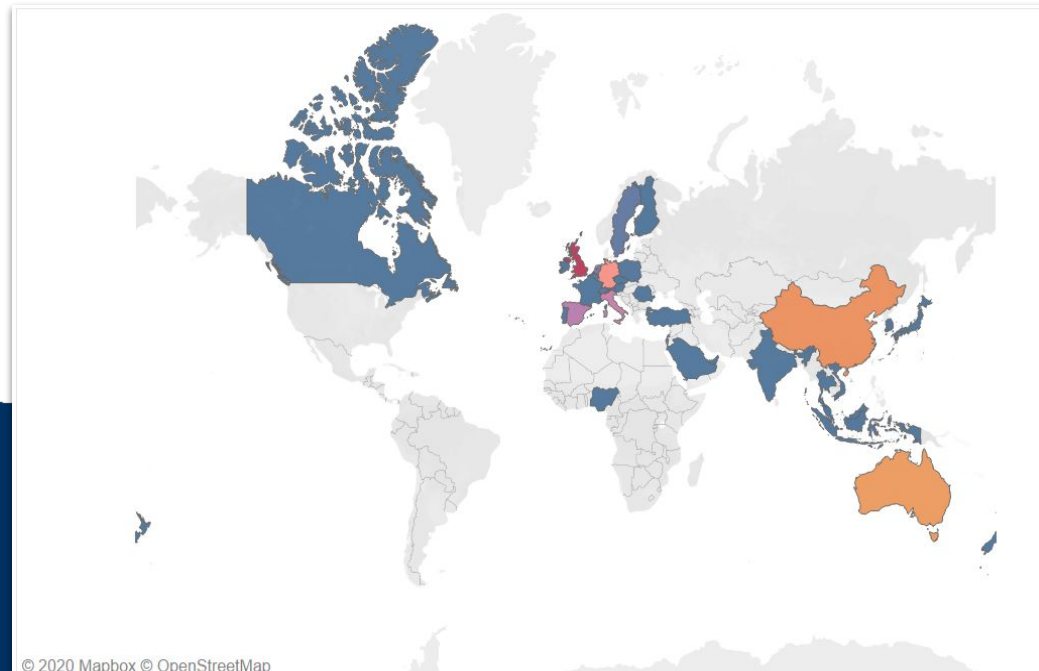
Color Scale for Global Footprint

- **Issue:** Users were struggling to evaluate the footprint accurately due to the size of US market. Also struggled with the sunset color range

- **Solution:** Moving to a logarithmic base scale helped in solving the US skew issue and we leveraged a Monochromatic scale to make it easier for the users

© 2020 Mapbox © OpenStreetMap

Usability Testing – Major Improvements

GlobalRisk

Welcome to the Global Risk Management Visualization

Global risk data for everyone

It's frustrating when you can't make a qualified assessment on the global risk position of a multinational corporation due to the enormous complexity of its operations. The global risk visualization addresses that challenge by offering the most intuitive options to interact with corporate risk data all in one place.

Valuable insights through disparate data connections

By connecting financial performance, global footprint, and national risk data for over 100 countries, the visualization helps you get a better sense of the political, economic and financial risks facing these organizations.

Target Audience: Investors, Students, Corporate Legal and Researchers

To get started, select the View (Financial or Risks) and Company you are interested in exploring

Landing Page

- **Issue:** Users were struggling to understand the purpose of the visualization and what they had to do to start using the visualization

- **Solution:** In order to completely reduce the learning curve and help our users start working as soon as possible, we developed a landing page that provided the context and right guidance to users who were visiting our visualization for the first time.

Demo of Final Visualization Leveraging Dash
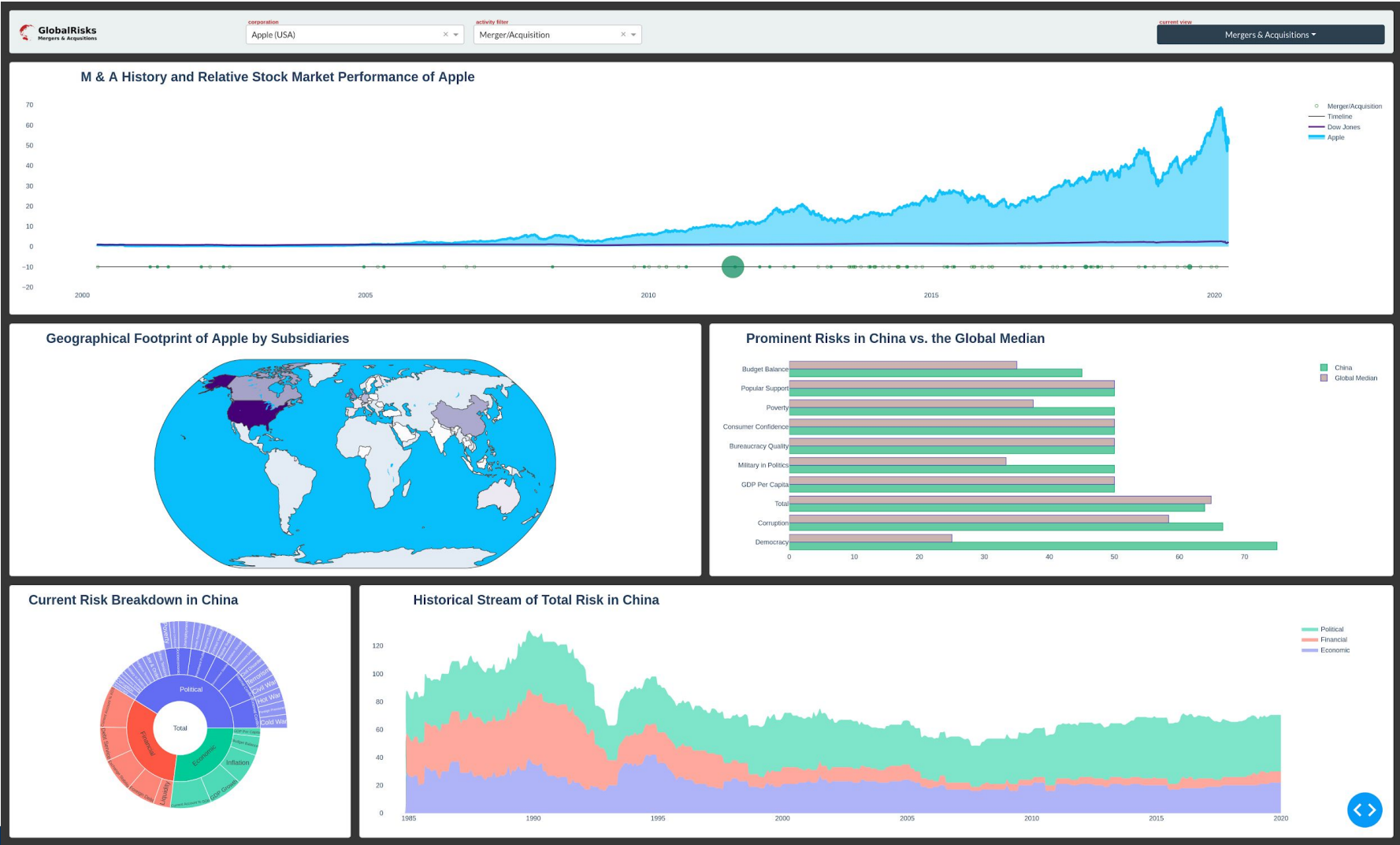
Appendix

Usability Testing Summary
A total of 9 test subjects were observed and surveyed to enhance the visualization

Improvements	Priority Level	Addresses Observation/ Feedback
Ease of Visualization Scrolling: Keep control bars visible during vertical page scrolling, or reduce need for vertical scrolling **Footprint dropdown:** Include labels above each dropdown so users can find it easily. Also rearrange the visualization to move the dropdowns close to the actual visualization	Must Have	<u>Footprint dropdown:</u> User struggled to find the footprint dropdown to see the geographic footprint by number of employees
Landing Page: Include a landing page to describe the purpose of the visualization, provide better context and direct users to start by selecting a company from the dropdown list	Must Have	<u>Visualization purpose:</u> User found it hard to grasp the purpose of the visualization or detect where to start once the web page is loaded User suggested the <u>Pre-population</u> of data tables and graphs when someone lands on the visualization
Geographic Footprint Scale: Update the scale to numeric system for non-data science users and include percentages (%) next to numbers where applicable	Must Have	<u>Geographic Footprint:</u> User suggested updating the scale to numeric system for non-data science users (Currently leverages the scientific scale) <u>Consistency on data format/</u> decimal places throughout the visualization <u>Median Risks Table:</u> User feedback to include the % symbol next to labels for median risks
Acquisition Graph: Remove all data prior to 2000 to have some consistency across acquisitions and financial performance graphs. Include indication that size of the dot is associated with the size of the acquisition	Must Have	<u>Timeline consistency on acquisitions graph:</u> User pointed out that acquisition data appears to be populated pre-2000 but without financial performance data. Needs to be consistent for both financial performance and acquisitions <u>Acquisition size:</u> User struggled with the ask to find the largest acquisition

Usability Testing Summary
A total of 9 test subjects were observed and surveyed to enhance the visualization

Improvements	Priority Level	Addresses Observation/ Feedback
White Space minimization: throughout the visualization would help in increasing the data-ink ratio	Must Have	White Space: Visually user found the visualization to have too much white space that could be better utilized
Units for Risk Graphs: Provide more clarity on the unit of measure for the risk values	Must Have	Complexity of risk trend graph: User found it hard to figure out how it works due to its stacked nature
Risk Values: Needs to be ascending so higher risk values represent a higher risk	Must Have	Risk trend graph: User found it difficult to connect the risk overview and risk trend graph.
Color matching: between risk overview and risk trends graphs would be helpful to connect the two visualizations and help users understand the risk trends better	Should Have	Didn't realize that they were connected
Clear/ Reset Button: For users who want to get back to the home page view after zooming in, especially in the sundial graph. For eg: Show hints/tooltips on how to zoom out when you zoom in by selecting elements using the mouse	Should Have	Zoom-out feature: Ability to zoom in is great. However the user is unable to zoom out after zooming into the graph. User had to refresh the whole page to get back to the default view
Starker/ Monochromatic Color Scale: Replace the scale with a monochromatic scale to make the color differences between countries more evident	Should Have	Starker color differences: Unable to find the country that has the 2nd largest footprint due to minimal color differences (currently scale moves from Yellow to Red) The user found it hard to distinguish between the colors on the global footprint map. Monochromatic coloring of the world map would be better to see the trend from highest to lowest
Risk Definitions: Note down the definitions of each risk. Include them at an accessible location so users have them handy	Should Have	Risk Definitions: Kevin struggled to find the definition for the % of XGS i.e Export of Goods and Services

Usability Testing Summary
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Improvements	Priority Level	Addresses Observation/ Feedback
Acquisition Graph Index Labels - Start the financial index at 0 instead of ending at 1. This is the standard approach leveraged when normalizing the scales across different trends	Should Have	Index Labels - The user found it hard to understand the scale that was used to normalize the financial performance graph between the Stock performance vs Dow Jones Index
Help Button: Include a help button to provide a definition or increase clarity on each visualization. Eg: Provide a hint whenever one visualization drives another	Should Have	Risk Definitions: Kevin struggled to find the definition for the % of XGS i.e Export of Goods and Services
Tutorial Video: Include a tutorial video to flatten the significant learning curve	Should Have	Visualization purpose: User found it hard to grasp the purpose of the visualization or detect where to start once the web page is loaded
Acquisition Differentiation: Visually differentiate acquisitions where the purchase price is not available. This update was de-scoped	Should Have	Acquisition size: User struggled with the ask to find the largest acquisition
Risk Representation: Maybe more helpful to show top 10 prominent risks of selected country instead of average/median of all countries	Could Have	Median Risks Table: User feedback to include the % symbol next to labels for median risks
Acquisition Details Table: Including a separate table that calls out the acquisition details when the user clicks on the dot would be helpful. This update was de-scoped since it was confusing for the user	Will Not Have	Acquisition size: User struggled with the ask to find the largest acquisition