

# **Narrative Visualization Final Report**

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## **Messaging.**

Visualization is trying to analyze if Microsoft stock MSFT is a good long term investment vehicle or not. It compares MSFT prices for the last 20 years with SPY prices from Yahoo Finance historical Data.

## **Narrative Structure**

Visualization follows Martini Glass structure where the user has to navigate from scene to scene by changing the year range 1Y,3Y,5Y,10Y and 20Y by using Next and Prev Button. User can explore the price change trend in a currently selected range only. Users can explore different market events like the 2008 and 2020 market crash and compare both volatility and price changes in the worst time also. Based on this analysis, users can decide how long one should keep a hold on MSFT stock to make profit and can plan entry & exit strategy.

## **Visual Structure.**

### **What visual structure is used for each scene?**

Overall visual structure is divided in 3 parts.

**Top panel** which shows the title of visualization, message and scenes( year ranges).

**Left Panel** shows different relevant messages for each scene upon scene selection.

**Right Panel** displays the chart showing the price comparison between SPY and MSFT.

### **How does it highlight to urge the viewer to focus on the important parts of the data in each scene?**

As users go through the visualization, the overall layout remains the same but the message for the selected scene is changing which provides consistent user experience. Upon selection of a new scene, on the left panel, it displays the conclusion of a price change, volatility and whether MSFT performs better than SPY or not. In this way, narrative is communicated through the interaction of the text and table in the left panel with the annotations of market crash events, min/max prices and other graphic elements in the right panel. Users can see particular date's SPY and MSFT price and price change by hovering over the chart.

### **How does it help the viewer transition to other scenes, to understand how the data connects to the data in other scenes?**

Viewer will transition through scenes using the Next and Prev button. Upon landing only 1Y is selected. As user goes through from 1 year comparison which does not tell much of the story but says MSFT prices varies with SPY and recently has been performing well. As a long term investor, the viewer will be interested in other year ranges so he would go on 3 years and will see that it still performs better but is more volatile than SPY. Upon switching to 10Y, users will see COVID market crash trend and how MSFT performed there. With 20Y, user will see 2008 market crash trend and see how it has performed in the long term. User can drill down and hover over on chart to see

### **Scenes.**

#### **What are the scenes of your narrative visualization?**

Scenes of narrative visualization are 1Y, 3Y, 5Y, 10Y and 20Y which shows the price change trend for MSFT and SPY for respective duration. 1Y shows the last 1 year of change. 3Y shows last 3 years of change.

#### **How are the scenes ordered, and why?**

For a long term investment in a stock it is necessary to see stock price trends in short term, medium term and long term. User will be interested to see the first current trend in the last one year, then in medium term 3 year/5 years and then long term 10 years/20 years. That tells a story that even with 2 big market crashes in the long term it performs better and is a good stock to invest in.

Using this trend analysis, user can plan the entry & exit strategy.

### **Annotations.**

#### **What template was followed for the annotations, and why that template? How are the annotations used to support the messaging? Do the annotations change within a single scene, and if so, how and why?**

Basically there are 2 types of annotations used.

- 1) Display Min and Max price in that time period to analyze the volatility and growth. It is being displayed by red circle for min and green circle for max.
- 2) Big market crash of 2008 and 2020-COVID to analyze the trend of SPY and MSFT at that time and how much it did fall during that time day by day. It is displayed by a vertical line which shows when the crash started.

Annotations do not change in a single scene but 2008 market crash is shown only in 20Y and 2020-COVID crash in 10Y.

### **Parameters.**

Parameter of the narrative visualizations are the year ranges and it is being selected by selecting the scenes by clicking Next and Prev button. They are last 1 year, 3 years, 5 years, 10 years and 20 years. Based on a selected range of time period, X-axis scales in that time range and Y-axis scales based on minimum and maximum price of SPY and MSFT during that time range. Also with year range change, content of the text on the left side changes which displays the table with start and end price during that range and how much stock grew in that time period. Minimum and maximum price and volatility also change which is being displayed on chart and on text respectively.

### **Triggers.**

When the user clicks on Next, it triggers the visualization left and right panel and based on selected time periods, below items are being changed.

- 1) Right panel chart x-axis scales same as time period range
- 2) Right panel chart y-axis scales between minimum and maximum price of SPY/MSFT during that time period
- 3) Min/Max price on the chart on right panel
- 4) Display any market crash event
- 5) Left panel conclusion about volatility and growth of SPY and MSFT
- 6) With a 20 year time range, provides the conclusion of analysis at last.