**Startup Funding Analysis Dashboard Design Document**

Our story contains 10 story points. Among them, story points 4, 5, 7 and 9 are dashboards.

**Dashboard #1**

The first dashboard (story point 4) in our story consists of two map charts, which display all the states in the United States. Both of them are filtered out years from 1960 to 1994 due to insufficient information during this period. The upper one shows the sum of the total funding amount of each state and the time differences of funding amounts between years from 1995 to 2014. The amount ranking is represented by the size of the circles, and the differences of the funding amount are displayed by using the Pages Shelf with animations. This view can clearly indicate how the development of startup fundings and the funding amount of each state changed over time. The map at the bottom shows the numbers of the startups receiving funding per state during the same period of time as the upper graph each year. It also includes the funding amount information represented by colors. Additionally, the Pages Shelf is used again here to demonstrate the time difference. This map can vividly display the boosting volume of the startup funding in the United States during these years.

From this dashboard, we are able to conclude that startup funding started boosting from 2004, and that New York and California are the two states among all that developed fastest as they are fast-developed states in the United States. We use this dashboard to introduce the main idea of the development of the startup fundings to our intended audience in this part - investors.

**Dashboard #2**

The second dashboard(story point 5) contains two parts mainly introducing the most popular and profitable markets recognized by investors during a specific period of time. Same as the previous dashboard, we filter out years from 1960 to 1994. The upper part consists of three pie charts, which are used for presenting the percentage of funding amount received by each state, each market as well as each city. Besides, we enable the filter function for the first two pie charts so we are able to determine which markets are most popular among investors in each state, and which cities have the largest percentage of each industry. The two bar charts at the bottom show the top 15 total funding amount markets, and the changes in top 10 markets during the 20 years we have filtered. With this dashboard, we are able to see the most welcomed states and markets by investors during this 20 years, especially California and New York, two of the most developed states in the country as discussed in the previous dashboard. Moreover, we can capture the trends of investors’ investment interests. For example, the bar chart at the bottom right indicates that from 1996 Software industry started showing up in the top 10 total funding amounts and remained in the top 10 until 2014. We can explicitly say that this market is one of the most profitable and potential industries regarded by investors, and investors could figure out which market deserves to be invested based on this dashboard.

**Dashboard #3**

The third dashboard(story point 7) is designed to offer a general picture of the fund raising market for a different group of audience -- the entrepreneurs, and what they could expect from it. The chart on the left up corner demonstrates that, from 2000 to 2014, ranked by the total amount, the capital raised largely came from venture capital, followed by debt financing and private equity. Yet on average, private equity has the highest amount raised by one company individually, which is indicated by the darkest blue shade in the bar chart. That makes sense because another major form of private equity, leverage buyout, needs substantial capital but usually applies to more mature companies.This chart illustrates that VC is the number one source for startups funding. Private equity on the other hand, though not generally applicable for startups, could be another source for large funding when a company struggles with finance in a mature stage.

The bar chart on the left down side shows how much a company can raise in different rounds on average. We limit the data from 10 percentile to 90 percentile to exclude some outliers and create a range for reference. For example, in series A, a company should generally expect to raise 1-13million from VC, and likewise series b, the amount should generally be 2.6 million to 25 million. Clearly not every company needs to go through multiple rounds, indicated by the fading colors of the bar chart as the funding round progresses from A to H. But for those who do generally raise more from later rounds. That being said, VC investment is not in its peak condition anymore, suggested by the line chart on the right, with the amount invested dropping significantly after the Dot-Com bubble around 2000 and 2001, and have been fluctuating around 10 million per company on average.

**Dashboard #4**

In the last dashboard(story point 9), our goal is to pinpoint the fitting Venture Capitals for startup companies. After setting up the overall goal, our first consideration: how to define fitting? Hunting through the investment sheet from the dataset, we found that we could split the fitting into 2 aspects: fitting to the market and fitting to the round. Then the second consideration popped up: if a VC invests 100% in a certain market but only has 1 or 2 records of investment, does it still make the VC a fitting choice for startup companies? The answer is of course no, but how could we avoid choosing this company through the design of the dashboard? Our solution is first selecting the most active venture capitals with over 200 records of investment in the last 15 years and go deeper to explore the preferable markets and rounds for each of those venture capitals. For the layout of this dashboard, we seperated the dashboard into left part and right part. Preferred markets of top VCs are presented on the left using pie charts. We visualize the market segmentation by pie charts as the size of the pie represents the average investing amount of each VC and color shows the classification of their investing markets. The most preferable and unconcerned markets for the top 5 VCs are highlighted with bold text surrounding the pies. By looking into this view, entrepreneurs can easily locate the top investors that are interested in certain industries.

Moving on to the right part, we select those top investors again but put another variable, funding round, under the column as well. We decided to visualize the decomposition of rounds by bar charts. The number in the bar charts and the length of each bar represent the total number of companies that each VC invested in each round while the color embellishing the ranking of average investing amount under each specific round, from dark red to light pink. The darker the color, the more money those VC invest. Entrepreneurs would first select the round they are currently in, and contact the VC with the longest bar to boost their chance of getting funded. Also, they would select the VC with the darkest color bar to maximize the

dollar value received.

In summary, our design of dashboard is aimed at leveraging the data from the past to provide actionable guidance for both investors and entrepreneurs.

**Startup Funding Analysis Final BI Project Document**

**Team and Data**

Our team consists of four members (Xinyue Jin, Ling Jiang, Shihan Wang, Yiyang Yin). The dataset we used is called Startup Venture Funding from the tableau public website. This dataset is about startup companies, investment, and acquisitions via [Crunchbase](http://www.crunchbase.com/) (total 4 sheets which are Companies, Rounds, Investments, and Acquisition).

**Audience, Objectives and Roles**

Our team focuses on the startups funding projects. There are two main objectives of our project. One is to help investors notice which markets have more potential for investment. The other one is to help startup companies figure out what the current fundraising market looks like and who are their potential investors they could seek funding from. In this way, the startup companies may increase their possibility of getting fundings. Therefore, our intended audience are investors and enterprisers. Xinyue Jin and Ling Jiang concentrate on the first purpose (first and second dashboards for investors part) by using the Companies sheet. Yiyang Yin and Shihan Wang concentrate on the second purpose (third and fourth dashboards for enterprisers) by using Rounds and Investments sheets.

**Audience#1: Investors**

For investors part, we first did data preparation for the Companies sheet. Basically, we select companies located in the United States since we would like to focus on the USA companies. Then, we select the related variables such as market types, total funding amount, and so on. We remove the null values, change some variables’ format, and finally group the similar markets.

In our first dashboard, we use two dynamic mapping graphs showing the funding trend in each state by year based on funding amount and number of companies that got funding. The reason we show this is that we would like to find out which states have better increases. We would like to use these states as examples to analyze the market rankings in the second dashboard. In the second dashboard, we first use pie charts in order to provide specific funding information in each state. We can then use filters to observe the distribution of markets in each specific state. With the proportion of each market in our example states (California and New York), we can figure out which markets have higher proportions in these two states. The similarity of markets in higher proportions can indicate that these markets may be also in top rankings in the whole United States. To check it, we then use the histogram to show which markets are in the top fifteen in the United States, and it ends up with similar results and meets our previous indication. Finally, we can use the dynamic histogram to show the changes in ranks of top 10 markets based on total funding amount. With this graph, we can tell which markets are resistant to investment with time changes and which markets start to be invested a lot in recent years. With all information above, we can finally give investors suggestions about which markets are potential and safe to invest.

**Audience #2: Entrepreneurs**

With entrepreneurs as our audience, we first utilize information from the sheet “Rounds”, which provides detailed information about how much money each company is funded with in each round it went through and when it got it. The business questions that are meant to be addressed here can be: what is the major source for entrepreneurs to seek funding from and what other alternatives are? What is the amount entrepreneurs should expect to raise from each round and whether the VC offering fund is fair? What does the VC industry look like right now and is it now a good/easy time to raise money?

Likewise, we limit our data to include only companies in the United States since market conditions differ across the globe. With respect to time, only data from 2000 to 2014 is included since too long of a time span may not reflect an accurate picture. As we aim to provide the funding expectations for entrepreneurs, we would like to be rigorous and focus on more recent data otherwise the mean derived will likely be gravitated towards abnormal fluctuations in the 1990s’ less mature market. In the bar chart that ranks the total amount raised by funding type(left up corner), we choose to only focus on Pre-IPO funding, meaning we exclude post-ipo equity and debt financing, which are in much larger amounts and less applicable to provide reference for startups companies. The result of the first chart points out VC being the number one funding source for startups, other alternatives including debt and private equity also show popularity while seed, grant and angel investors play less significant roles. This finding prompts us to dive deeper in the VC industry to see if we could dig more valuable information and constructive advice for entrepreneurs seeking funds.

The bar chart in the left down corner suggests a reasonable range entrepreneurs can expect to raise from each round. It gives founders an idea if the company's strategic funding demand is in alignment with the supply and if VC offers are within the industrial average levels. Finally, the line chart on the right depicts the amount raised by funding type across time. We choose to only focus on the trend of VC for various reasons. First, VC is the leading source and also the industry we want to dig deeper as mentioned earlier; second, VC is more institutionalized and mature so the funding is distributed considerably evenly across startups companies compared to other source fundings, meaning there won’t necessarily be several large amounts of transactions standing out to skew the results; third, some funding sources such as angel and seed are highly correlated with VC trend but in a much smaller size. The result suggests currently it may not be a “golden age” for VC but not generally a bad time to raise money.

Ultimately, we analyzed the sheet “Investment” to stand in entrepreneur's shoes and identify the go-to Venture Capitals to maximize the chance to get funded or the dollar value of funding. Living in a golden era of startups, we are not only experiencing the booming of tech startups but the great rise of VC capitals and accelerator programs. The robust VC ecosystem with more capital certainly made the startup more easily to get funded and with larger funding, however, it created new challenges for entrepreneurs in detecting the VC that they should go talk with. This dashboard is designed for entrepreneurs who have a hard time in deciding the VCs they should connect and network. To land the target venture capitals for start-up companies, we analyzed the investors data in 2 following methods: first, we would like to see who are the top investors that invested most companies in the last 15 years. And for those top investors, what types of market are they most likely to invest in? After filtering out the records before 1999 and selecting the records from top 10 markets, we set a condition to pick the investor that has larger than 200 investing records, which returns us those top 5 venture capitals including DFJ, KPCB, New enterprise associates and etc. Clearly, the CEO of a biotechnology start-up should put great efforts on contacting and networking with the Kleiner Perkins Caufield & Byers while the SV Angel is not a smart option to invest too much time. Also, as shown in the size of the pies, the KPCB is the most generous VC as the average investing amount is highest among these top 5 Venture Capitals. In this view, entrepreneurs could find the most fitting investors of their market in a straightforward way. Second, we are interested in figuring out the top VCs for each fundraising round, from round A to round G. Similarly, we extract the record form the same time period as we did in the first part and select those top 5 investors again. In detail, entrepreneurs who are interested in raising Series A funds could contact SV Angel to boost the chance of getting funding; while New Enterprise Associate is the place for them to maximize the dollar amount of funding. With this view, entrepreneurs would land the proper VC relating to the fundraising round.