INVESTMENT CASE STUDY

SUBMISSION

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UpGrad

Spark Funds plan to invest 5 to 15 Million USD in English speaking countries where most other investors are investing, in best sector through best investment type

Criteria

- To invest between **5 to 15 million USD** per round of investment
- To invest only in **English-speaking countries** because of the ease of communication with the companies we would invest in
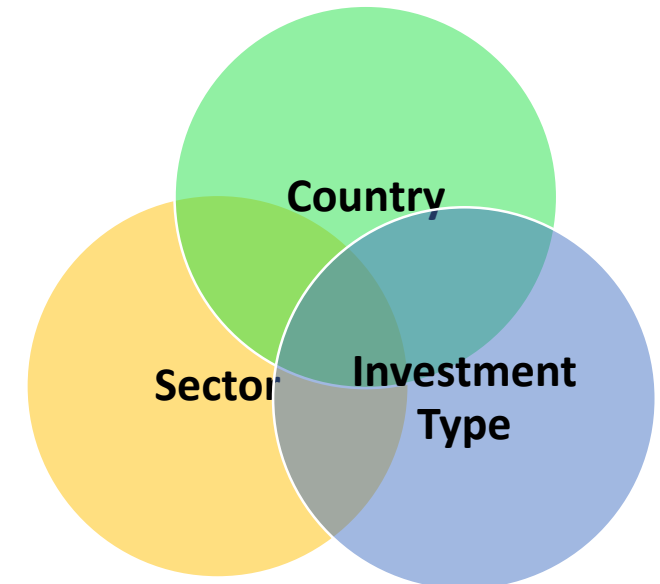
Strategy

- We want to invest where most **other investors are investing**.

Business objective

- The objective is to identify the **best sectors, countries,** and a **suitable investment** type for making investments.
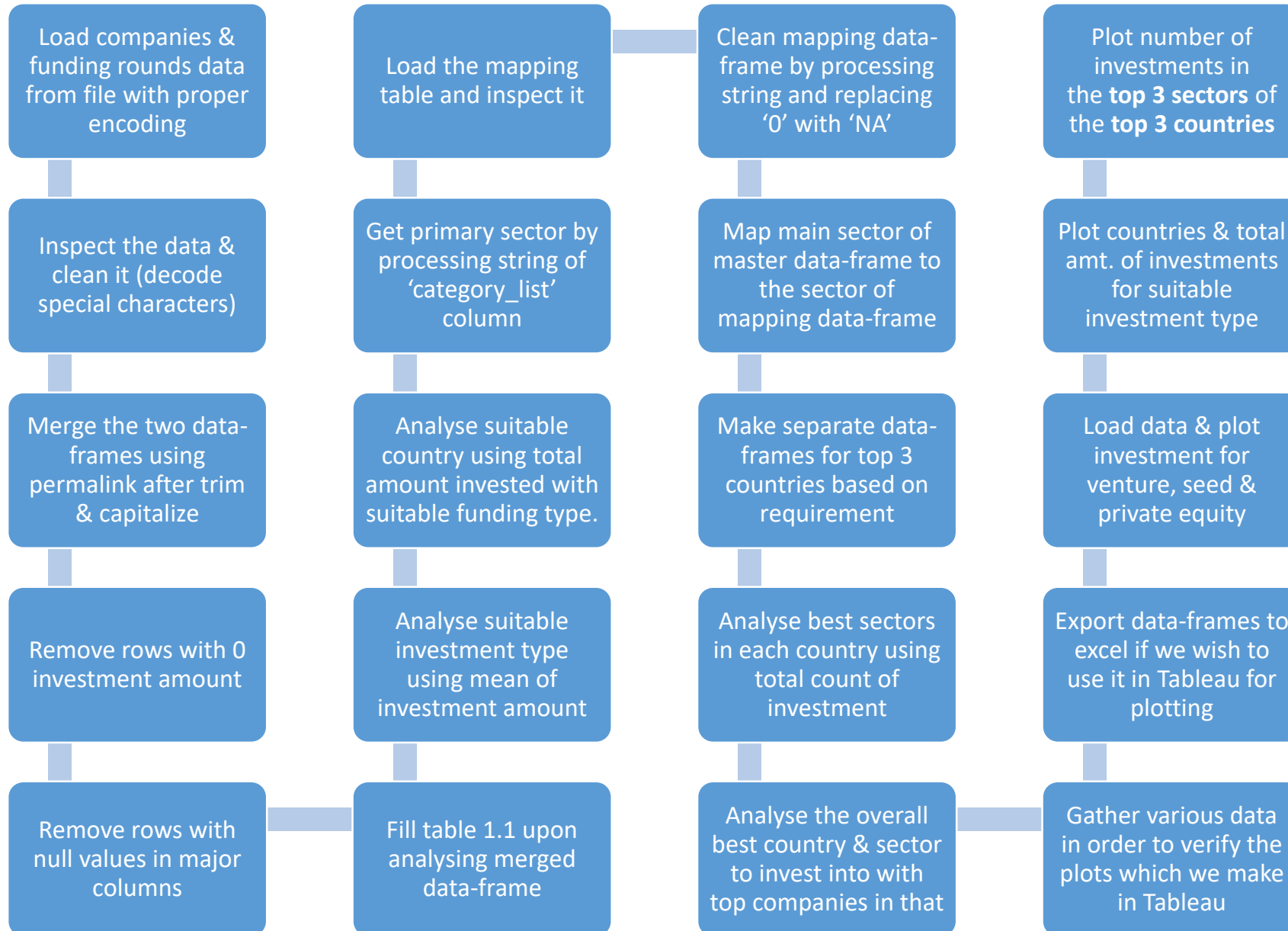
Problem Solving Methodology

Column 1:
- Load companies & funding rounds data from file with proper encoding
- Inspect the data & clean it (decode special characters)
- Merge the two data-frames using permalink after trim & capitalize
- Remove rows with 0 investment amount
- Remove rows with null values in major columns

Column 2:
- Load the mapping table and inspect it
- Get primary sector by processing string of 'category_list' column
- Analyse suitable country using total amount invested with suitable funding type.
- Analyse suitable investment type using mean of investment amount
- Fill table 1.1 upon analysing merged data-frame

Column 3:
- Clean mapping data-frame by processing string and replacing '0' with 'NA'
- Map main sector of master data-frame to the sector of mapping data-frame
- Make separate data-frames for top 3 countries based on requirement
- Analyse best sectors in each country using total count of investment
- Analyse the overall best country & sector to invest into with top companies in that

Column 4:
- Plot number of investments in the **top 3 sectors** of the **top 3 countries**
- Plot countries & total amt. of investments for suitable investment type
- Load data & plot investment for venture, seed & private equity
- Export data-frames to excel if we wish to use it in Tableau for plotting
- Gather various data in order to verify the plots which we make in Tableau

Analysis – Funding Type Analysis

SI.No	Questions	Answer
	Table-2.1	
	Average Values of Investments for Each of these Funding Types	
1	Average funding amount of venture type	11729865.71
2	Average funding amount of angel type	977572.63
3	Average funding amount of seed type	750319.05
4	Average funding amount of private equity type	73979134.15
5	Considering that Spark Funds wants to invest between 5 to 15 million USD per investment round, which investment type is the most suitable for them?	venture

- We calculated average funding against each of funding type (Venture, Angel, Seed and Private Equity)

- As only "**Venture**" type funding is meeting condition of investment range 5 to 15 Mn USD, we shall proceed with it

Analysis – Country Analysis

USA	420,068,029,342.00
CHN	39,338,918,773.00
GBR	20,072,813,004.00
IND	14,261,508,718.00
CAN	9,482,217,668.00
FRA	7,226,851,352.00
ISR	6,854,350,477.00
DEU	6,306,921,981.00
JPN	3,167,647,127.00

Table - 3.1

Analysing the Top 3 English-Speaking Countries

Sl.No	Questions	Answers
1	Top English speaking country	USA
2	Second English speaking country	GBR
3	Third English speaking country	IND

- As we want to invest in countries with the highest amount of funding through Venture investment type, we have calculated same for top 9 countries. This is a part of our broader strategy to invest where most investments are occurring.

- As China does not have English as one of official language we will not consider it.
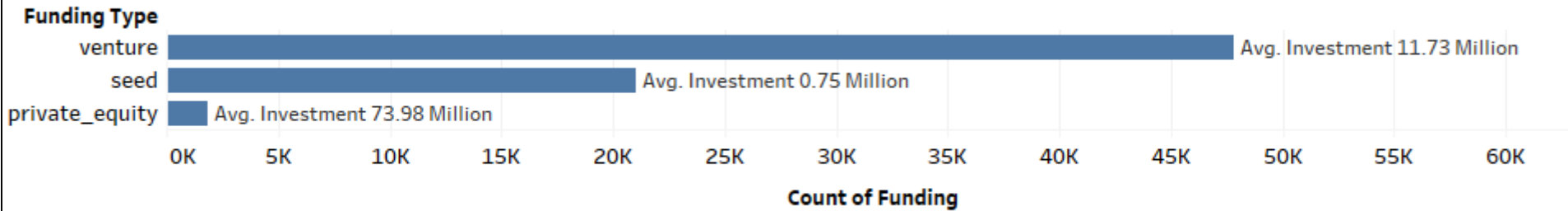
- We are shortlisting USA, Great Britain and India

homepage_url	category_list_x	status	country_code	state_code	region	city	founded_at	primary_sector	category_list_y
http://livfame.com	Media	operating	IND	16	Mumbai	Mumbai	NaN	MEDIA	MEDIA
p://www.qounter.com	Application Platforms|Real Time|Social Network...	operating	USA	DE	DE - Other	Delaware City	04-09-2014	APPLICATION PLATFORMS	APPLICATION PLATFORMS
http://www.0-6.com	Curated Web	operating	CHN	22	Beijing	Beijing	01-01-2007	CURATED WEB	CURATED WEB
p://www.01games.hk/	Games	operating	HKG	NaN	Hong Kong	Hong Kong	NaN	GAMES	GAMES
http://ondinebio.com	Biotechnology	operating	CAN	BC	Vancouver	Vancouver	01-01-1997	BIOTECHNOLOGY	BIOTECHNOLOGY

- Many companies have multiple sectors hence we discussed with the CEO and come up with the **business rule** that the first string before the vertical bar will be considered the **primary sector**

- Then we mapped these primary categories of each company with eight main sectors like manufacturing, health etc.

- We then created separate country-wise data-frames for top 3 countries based upon the criteria that funding type must be suitable, ('venture' in our case) falling within the 5-15 million USD range.

	Table - 5.1			
	Sector-wise Investment Analysis			
Sl.no	Questions	C1	C2	C3
1	Total number of Investments (count)	12064	621	328
2	Total amount of investment (USD)	107766584223	5379078691	2949543602
3	Top Sector name (no. of investment-wise)	Others	Others	Others
4	Second Sector name (no. of investment-wise)	Social, Finance, Analytics, Advertising	Social, Finance, Analytics, Advertising	Social, Finance, Analytics, Advertising
5	Third Sector name (no. of investment-wise)	Cleantech / Semiconductors	Cleantech / Semiconductors	News, Search and Messaging
6	Number of investments in top sector (3)	2950	147	110
7	Number of investments in second sector (4)	2714	133	60
8	Number of investments in third sector (5)	2350	130	52
9	For point 3 (top sector count-wise), which company received the highest investment?	Virtustream	Electric Cloud	FirstCry.com
10	For point 4 (second best sector count-wise), which company received the highest investment?	SST Inc. (Formerly ShotSpotter)	Celltick Technologies	Manthan Systems

- We shortlisted companies with 5 to 15 Million USD investment under each round of Venture investment type
- We now have data-frame for each country separately
- Top 3 sectors for each country on the basis of count of investments received have been identified
- Then we calculated company wise total funding received under Venture investment type with each funding round between 5 to 15 Million USD, top companies under each sector for each country have been identified.

1. A plot showing the fraction of total investments (globally) in venture, seed, and private equity, and the average amount of investment in each funding type. This chart should make it clear that a certain funding type (FT) is best suited for Spark Funds.
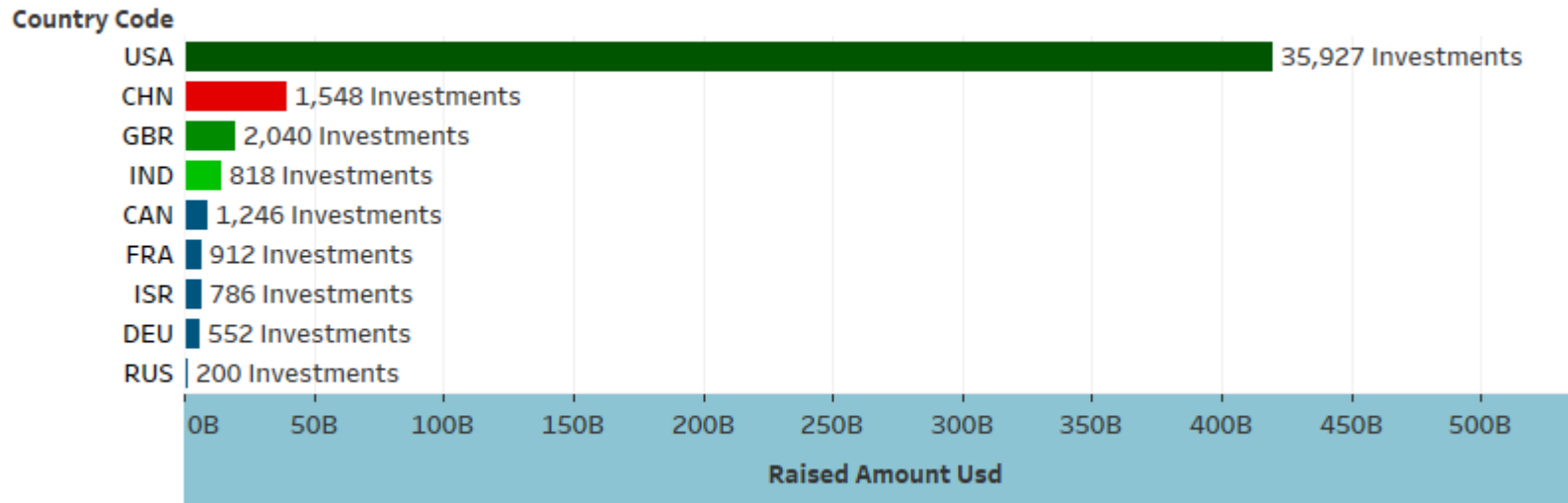
Count of Funding for each Funding Type. The marks are labeled by AVG([Raised Amount Usd]/1000000). The view is filtered on Funding Type, which keeps private_equity, seed and venture.

FINDINGS:

- Funding Type **"venture" got maximum total investment (globally)**
- Funding Type **"venture" have average amount of investment (11.73 Million) which is suitable range for us.**
- Considering above findings, **we choose to proceed with Funding type "venture"**

2. A plot showing the top 9 countries against the total amount of investments of funding type FT.
This should make the top 3 countries (Country 1, Country 2, and Country 3) very clear.

Country Code

Country Code		
USA		35,927 Investments
CHN		1,548 Investments
GBR		2,040 Investments
IND		818 Investments
CAN		1,246 Investments
FRA		912 Investments
ISR		786 Investments
DEU		552 Investments
RUS		200 Investments

0B   50B   100B   150B   200B   250B   300B   350B   400B   450B   500B
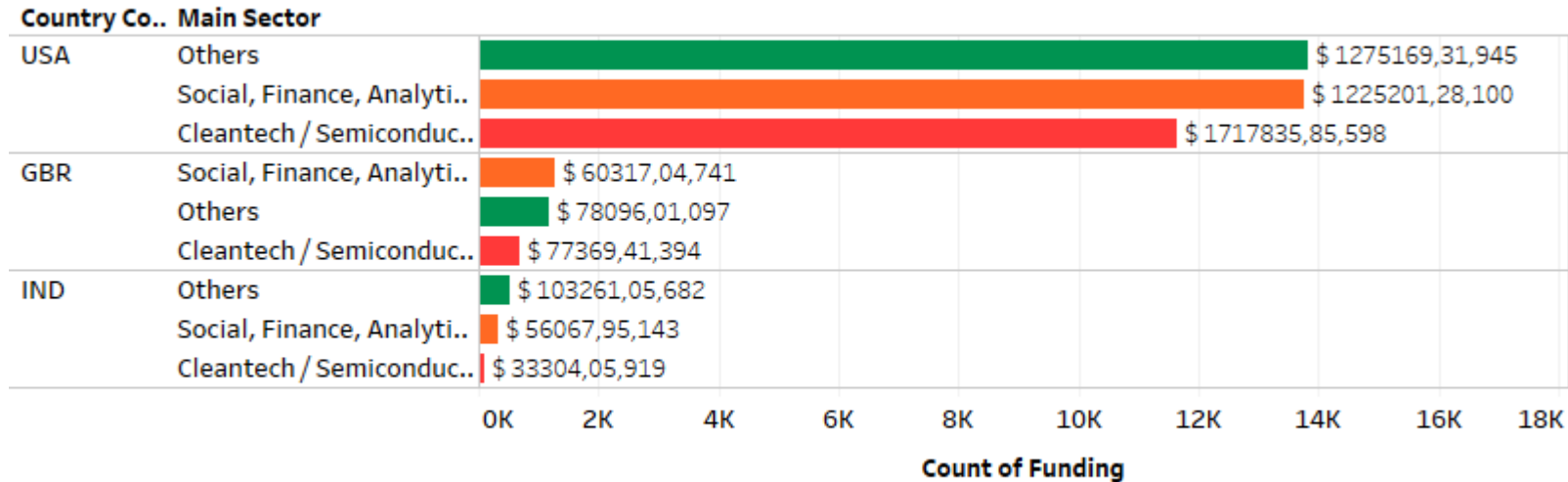
Raised Amount Usd

Sum of Raised Amount Usd for each Country Code. Color shows details about Country Code. The marks are labeled by count of Funding. The
data is filtered on Funding Type, which keeps venture. The view is filtered on Country Code, which keeps 9 of 134 members.

FINDINGS:
- **USA got maximum total amount of funding** (400+ Billion) for Funding type "venture"
- **USA got maximum total count of funding** (35.927 investments) for Funding type "venture"
- Top 3 countries are USA, CHN and GBR. However, CHN(China) is not English-speaking country, thus we include next (IND)
- Final set of top 3 countries based upon our requirements are **"USA", "GBR", "IND"**

3. A plot showing the number of investments in the top 3 sectors of the top 3 countries on one chart (for the chosen investment type FT).

Country Co..	Main Sector	Count of Funding
USA	Others	$ 1275169,31,945
	Social, Finance, Analyti..	$ 1225201,28,100
	Cleantech / Semiconduc..	$ 1717835,85,598
GBR	Social, Finance, Analyti..	$ 60317,04,741
	Others	$ 78096,01,097
	Cleantech / Semiconduc..	$ 77369,41,394
IND	Others	$ 103261,05,682
	Social, Finance, Analyti..	$ 56067,95,143
	Cleantech / Semiconduc..	$ 33304,05,919

Count of Funding for each Main Sector broken down by Country Code. Color shows details about Main Sector. The marks are labeled by sum of Raised Amount Usd. The view is filtered on Country Code and Main Sector. The Country Code filter keeps GBR, IND and USA. The Main Sector filter keeps Cleantech / Semiconductors, Others and Social, Finance, Analytics, Advertising.

FINDINGS:
- Within **Funding Type "venture"**, amongst **top 3 best-suited countries ("USA", "GBR", "IND")**, the **"Others"** sector is best-fit
- However, **"Others" is a broad category** and **we see very similar results for "Social, Finance, Analytics, Advertising" sector**
- **There is significant difference amongst USA and other 2 countries** in the total amount of funding (with Funding Type "venture")
- Considering above findings, we recommend to invest for Funding Type **"venture"** in country **"USA"** in **"Others"** or **"Social, Finance, Analytics, Advertising"** sector

- Our strategy is that we want to invest where most **other investors are investing**.

- Also our criteria of investments is **investing 5 to 15 Million USD** per round in countries having **"English"** as one of the official languages

- All sectors in three countries are meeting above 2 criteria's but maximum investment is **heavily attracted by USA**

- **USA has highest count and value of investments received hence we recommend to invest in USA**

- Considering sector, **"Others"** sector has highest count of investments at same time it is quiet a broad category whereas second best category in USA is **"Social, Finance, Analytics, Advertising"**

- **"Others"** and **"Social, Finance, Analytics, Advertising"** are both good sectors to invest in. We would recommend both these sectors

- Based on above criteria, "Virtustream" and "SST Inc. (Formerly ShotSpotter)" are two good companies to invest in.