

# **A Guide to Social Media in Finance**

**December 2012**

**This report considers four elements of Social Media in Finance.**

- **What are the sources of Social Media information related to Finance.**
- **Social Media Analytics and how do analyse social media to be able to extract valuable tradable data from it.**
- **How do you Trade on the basis of Social media data.**
- **What is trading in social groups.**

**The objective is to give the reader an understanding of the Finance Social Media landscape and provide sources of information and links for further research**

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This report is a work in progress and it is our intention to publish it every 6 months. If you know additional sources of data please inform us and they will be incorporated into the next edition.

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As many readers of the report are intimately involved in Fintech transactions you may have much more additional information on the detail of specific transactions. A full and complete and unreserved apology is offered in advance for any misreporting, please contact the author to correct any inaccuracies.

**Collaboration**

A call for Collaboration on data sources and ways to enhance the value of this report to members.

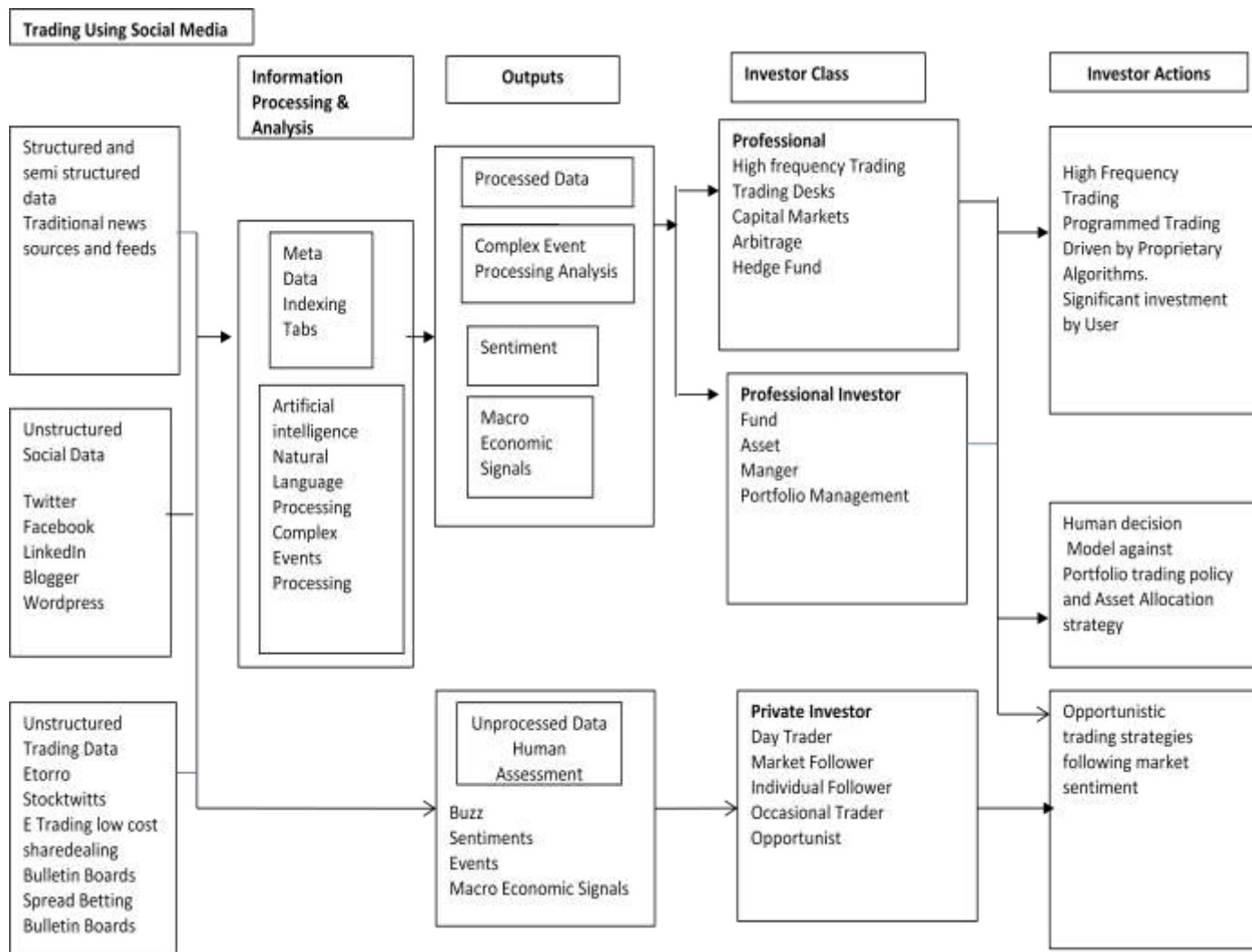
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## 1.0 Preface and Executive Summary



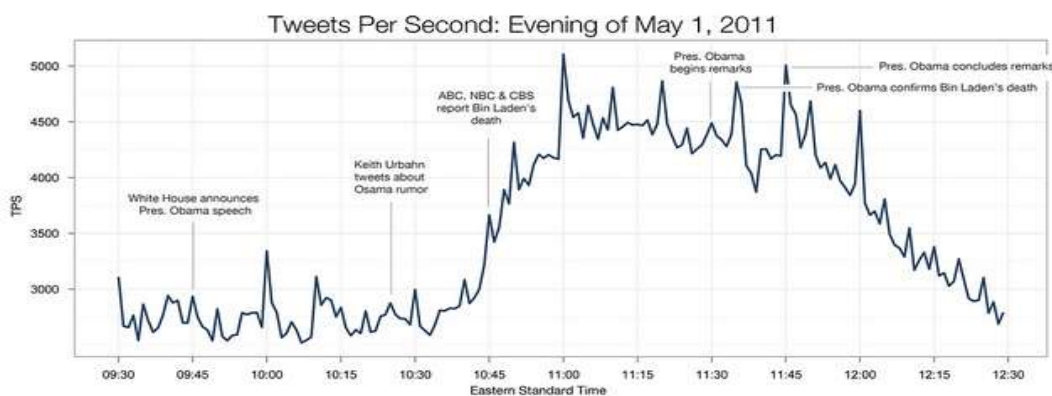
Source:  
<http://blog.datasift.com/2012/05/18/twitter-sentiment-mirrors-facebook-stock-prices/#.UL0zH-RT7ao>

### 1.1 Preface

"Buy when the cannons are firing, sell when the trumpets are blowing" is a quote attributed to Baron Nathan Rothschild, sound investment advice no doubt, but you have to know when the cannons are starting firing or the trumpets blowing. In earlier times this kind of information could only be garnered by highly sophisticated intelligence systems and many personnel in place. Information collection has changed profoundly with 2.5bn devices connected to the internet forecast to grow to 10bn by 2020 nearly every human will become a data collection point. Baron Rothschild's problem today would be he would be overwhelmed by too much data and the speed that it moves; he couldn't open or close his trading positions fast enough. This report maps out how information sources from Social Media is influencing financial markets.

### 1.2 Executive Summary

Does this have relevance, or is it noise amplification?



This graph of tweets is the number relating to "Bin Ladens" name on the day of the military operation against his headquarters. It is an example how a major news event Information could move financial markets, the global scale of Social Media information, its instantaneous nature, an ability to relate subject, person, location, and connections. Every Smartphone is an information collection point, cloud computing and big data technologies mean analysis and use of this mass of raw data, into information then into knowledge is now in the reach of most commercial organisations and will expand to personal and consumer markets. This paradigm change in data collection its volume and the means to process it into knowledge cannot be ignored.











## 1.3 Size

### 1.3.1 Twitter

Has reached 400m Tweets per day with 140m active accounts, as of June 5 2012 according to Dick Costolo<sup>1</sup> CEO Twitter<sup>2</sup> in the same interview Costolo state he does not see Twitter as an analytics company, that's for the ecosystem. An illustration of Twitter's scale observing [Trendsmap.com](http://Trendsmap.com) "#Finance" was displayed in 124 tweets worldwide in 30mins at 20.24 GMT 11 December 2012.

**1.3.2 Facebook:** On September 14<sup>th</sup> 2012 Facebook hit 1billion users<sup>3</sup> with 600m mobile users, 1.13 Trillion likes, 140m friend connections, 219m photos, 17 Billion separate location tagged pieces of data. The most talked about brands on Black Friday 23 November 2012, were 1.Walmart, 2.Toys are us, 3. Macy's 4.Amazon, 5. Converse, 6. Footlocker, 7.Spencers, 8.Aeropostale, 9. Target, 10 Kohl's.  
<sup>4</sup> does this activity indicate likely sales levels or earnings?

The list below is the most liked/talked about Financial Institutions and Banks on Facebook. It provides sobering reading for the West's financial services industry, they are mainly absent. See appendix 4 for more detailed information.

Ranking	Name	Number of Likes	Country	This is the voting list of 1 billion people.
1	 <a href="#">Itaú</a>	3,536,134	Brazil	Even accepting the demographic bias of Facebook towards 22-26 year olds the absence of the West's financial institutions from this list indicates their marketing and engagement strategies are alienating them from their future market, i.e. 22-26 year olds.
2	 <a href="#">Bradesco</a>	2,708,274	Brazil	
3	 <a href="#">Garanti Bankası</a>	1,214,627	Turkey	
4	 <a href="#">Akbank</a>	1,184,165	Turkey	
5	 <a href="#">ICICI Bank</a>	994,743	India	
6	 <a href="#">GTBank</a>	787,201	Nigeria	
7	 <a href="#">IDBI BANK</a>	736,285	India	Looking forward one could interpret it as a leading indicator of the decline of the financial institution in the West as is known. More detailed analysis is shown in appendix 1.
8	 <a href="#">RBS 6 Nations</a>	726,119	UK This is the Rugby page not the Bank	
9	 <a href="#">CIMB Malaysia</a>	704,315	Malaysia	
10	 <a href="#">Bank of America</a>	699,879	USA	

[http://pagedata.appdata.com/pages/leaderboard/fc/fan\\_count/type/466](http://pagedata.appdata.com/pages/leaderboard/fc/fan_count/type/466) 2 December 2012

### 1.3.3 LinkedIn

Has at least 187m<sup>5</sup> users, its main monetisation route is a data product called recruiter (3 seats @\$21,000pa<sup>6</sup>) giving advanced search metrics for recruiters to search for potential candidates. It does not publicly state if it sells it newsfeed data, but has commented on the fact that its newsfeed is much clearer since Twitter cut off its API to LinkedIn mid 2012

### 1.3.4 Google

Google's underlying data mining architecture is called Dremel<sup>7</sup> which combines with Pregel Graph gives it the planets greatest datasource to mine. On the surface it does not sell the results of its searches or interconnectedness within its range of services but it did have c\$1bn of other revenue in 2011 unrelated to advertising. According to [Alexa](#) Google is the world's largest site visited by 45-47% of the worlds internet users daily, it is estimated to have at least a million servers. In terms of data

<sup>1</sup> <http://www.economist.com/events-conferences/americas/information-2012>

<sup>2</sup> [http://news.cnet.com/8301-1023\\_3-57448388-93/twitter-hits-400-million-tweets-per-day-mostly-mobile/](http://news.cnet.com/8301-1023_3-57448388-93/twitter-hits-400-million-tweets-per-day-mostly-mobile/)

<sup>3</sup> <http://newsroom.fb.com/download-media/4227>

<sup>4</sup> <http://newsroom.fb.com/News/540/Holiday-Trends-and-Data>

<sup>5</sup> <http://investors.linkedin.com/releasedetail.cfm?ReleaseID=718071>

<sup>6</sup> <http://www.forbes.com/sites/georgeanders/2012/06/27/how-linkedin-strategy/3/>

<sup>7</sup> [http://static.googleusercontent.com/external\\_content/untrusted\\_dlcp/research.google.com/en/us/pubs/archive/36632.pdf](http://static.googleusercontent.com/external_content/untrusted_dlcp/research.google.com/en/us/pubs/archive/36632.pdf)



held it is estimated to be in the world's top five databases. You can use Google's analytics section to identify popularity of keywords (Stockprices) it is a limited source of information as does not show volumes of searches.

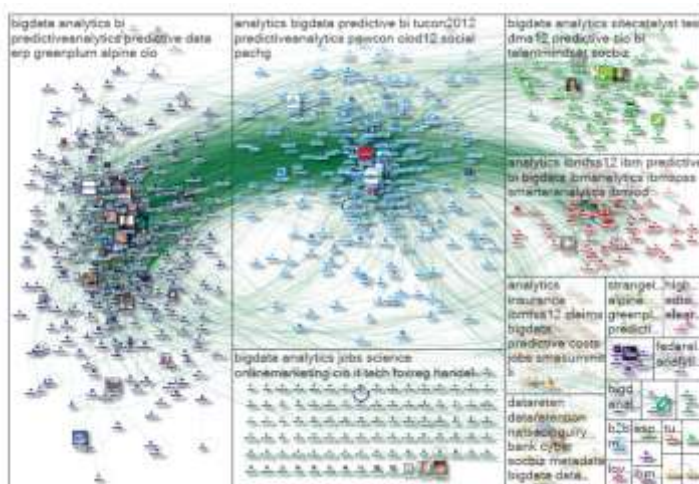
### 1.3.5 Traditional News services – Newspapers Magazines

These total c50, 000 using Dow Jones sources, with c6, 000 being daily newspapers

### 1.3.6 Blogs

173m blogs are tracked by NM Incite (Nielsen's MacKinsey)<sup>8</sup> with 58m being Wordpress.

## 1.4 Predictive Analysis



Predictive Analysis attempts to predict future behaviour from real time and historical data behaviours. It is one of the favoured disciplines to merge Social Media data into historical and traditional statistical techniques and provide rigorous forecasting models. This methodology is known in finance being used in credit scoring and underwriting risk assessment. [Angoss](#) is applying predictive analytics to business problems which includes insurance markets; their published [white paper](#) library has many valuable insights into how to apply these techniques.

## 1.5 Academic basis for Twitter based trading.

There are 4 papers quoted to back up the theory that twitter and social media can predict stock markets

### 1.5.1 Indiana/ Manchester Universities<sup>9</sup>

*"We find an accuracy of 87.6% in predicting the daily up and down changes in the closing values of the DJIA and a reduction of the Mean Average Percentage Error by more than 6%".*

### 1.5.2 Technical University Munich<sup>10</sup>

*Tweets and Trades: The Information Content of Stock Microblogs – "We find the sentiment (i.e., bullishness) of tweets to be associated with abnormal stock returns and message volume to predict next-day trading volume. In addition, we analyze the mechanism leading to efficient aggregation of information in microblogging forums. Our results demonstrate that users providing above average investment advice are retweeted (i.e., quoted) more often and have more followers, which amplifies their share of voice in microblogging forums".*

### 1.5.3 Pace University<sup>11</sup> - O'Connor

*Arthur O'Connor, a second year doctoral candidate in Seidenberg's DPS program, recently spent 10 months investigating the relationship social media has with Wall Street—to some interesting results.*

<sup>8</sup> [http://blog.nielsen.com/nielsenwire/online\\_mobile/buzz-in-the-blogosphere-millions-more-bloggers-and-blog-readers/](http://blog.nielsen.com/nielsenwire/online_mobile/buzz-in-the-blogosphere-millions-more-bloggers-and-blog-readers/)

<sup>9</sup> <http://arxiv.org/pdf/1010.3003v1.pdf> 2010 study Johan Bollen School of Informatics and Computing, Indiana University-Bloomington, United States Email: [jbollen@indiana.edu](mailto:jbollen@indiana.edu), Huina Mao School of Informatics and Computing, Indiana University-Bloomington, United States Email: [huinmao@indiana.edu](mailto:huinmao@indiana.edu), Xiao-Jun Zeng School of Computer Science, The University of Manchester, United Kingdom Email: [x.zeng@manchester.ac.uk](mailto:x.zeng@manchester.ac.uk)

<sup>10</sup> [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1702854](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1702854) <http://www.strategie.wi.tum.de> Timm O. Sprenger\*, Isabell M. Welp

<sup>11</sup> <http://www.pace.edu/about-us/node/682>

O'Connor was able to show a strong correlation between the Internet popularity of three consumer brands and their stock prices. "There's no such thing as a daily revenue count. Companies do quarterly revenue reports, so I used stock prices as a daily indicator," explains O'Connor.

#### 1.5.4 HP Labs Paper Predicting the Future with Social Media<sup>12</sup>

*"We show that a simple model built from the rate at which tweets are created about particular topics can outperform market-based predictors. We further demonstrate how sentiments extracted from Twitter can be further utilized to improve the forecasting power of social media".*

Although the papers are interesting, there is not enough literature to prove causal relationships between Social Media behaviours and Trading, what they point to is the need for more research.

### 1.6 Entrepreneurial Opportunities

- The whole field is just opening up, no one entity, channel or technique dominates
- Data collection is weak outside the top 5 Social Media networks in USA, Europe and developed Asia. The opportunity to enrich data collection sources is high.
- Social media data and its analytics are at the start of their development as well as Social sentiment analysis.
- Hard Science is needed, neural networks, machine learning, natural language processing, artificial intelligence is just starting to be applied to Social Media.
- Social media trading strategies and how to use the new information flows are just emerging
- Trading in Social groups is not new, but is on the point of changing. Individual investors now have access to how other investors are trading.
- The voice and opinion of the crowd or market has been subdued by the dominance of computer based trading over the past 30 years and decline of open outcry markets. Social Media has the capacity to illustrate the voice and sentiment of the market.
- Network mapping techniques applied to tweets and social media give trading insights
- There will be considerable scope for interaction between Finance social media analysis and Brand, FMCG (Fast moving consumer goods) analysis techniques and conclusions
- The analysis of news, social media and sentiments is news content that can be sold in its own right.
- Entrepreneurial opportunity exists in all aspects of the trading value chain, hard science and advanced computing techniques unlock this opportunity.

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<sup>12</sup> <http://www.hpl.hp.com/research/scl/papers/socialmedia/socialmedia.pdf> Sitaram Asur

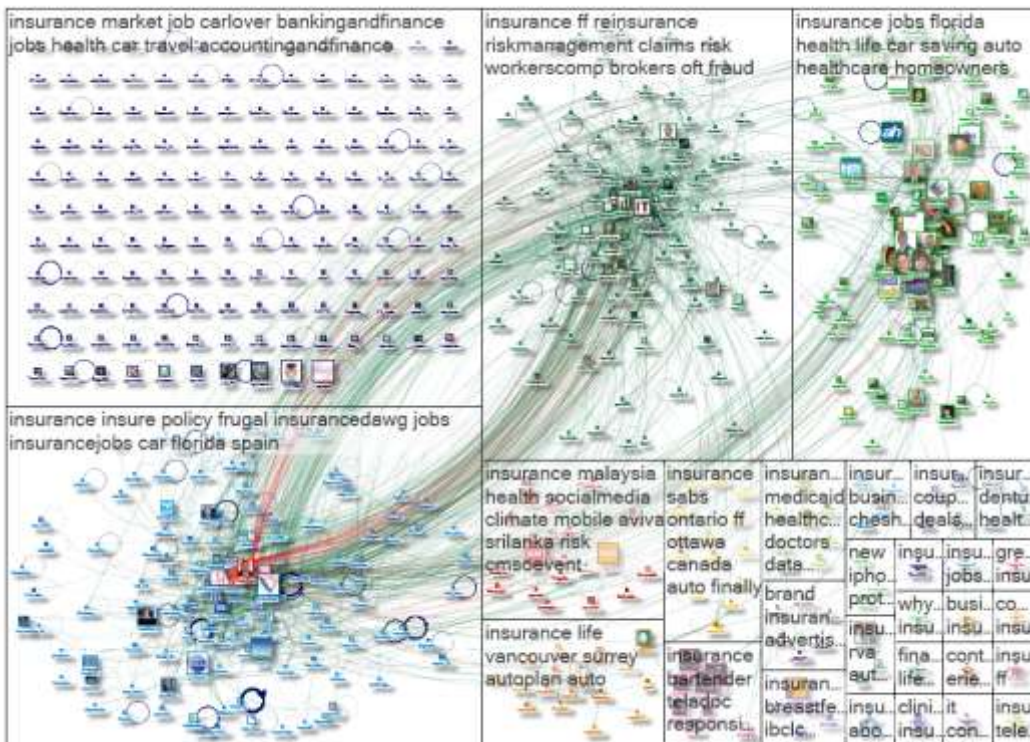
Email: [sitaram.asur@hp.com](mailto:sitaram.asur@hp.com), Bernardo A. Huberman, Email: [bernardo.huberman@hp.com](mailto:bernardo.huberman@hp.com) Social Computing Lab, HP Labs Palo Alto, California

## 2.0 Sources of Social Media information related to Finance.

### 2.1 Overview

The use of Social Media data as an information tool for Financial Services and share trading is still in its infancy. Bulletin boards had influence in the early days of the internet c2000; they are still there but are becoming integrated into social media forums. The main use of social media analysis to date has been in identifying social influence trends, brands performance, its use is now starting to migrate into capital market trading, share trading. Little use of social media is made by mainstream retail financial services organisations mainly due to regulatory risk.

This graph displays linkages between 604 twitter users over a one day period using single word "insurance" In appendix 4 the underlying specification for the graph is identified. It's busy and difficult but shows highly complex networks driven by subject, location and tweet interrelationship



Source: <http://nodexlgraphgallery.org/Pages/Graph.aspx?graphID=1257> Acknowledgement Marc Smith.

The complexity and opportunity of social media data and how topics evolve through location is illustrated by this Graph. It is only in the past five years that such relationships could be established and mapped; you can now do this in near real time and observe networks growing and declining over time. Extracting reliable meaning from this data is the challenge, but it cannot be ignored. In financial markets and financial services your competitors will be using this data to aid their decision making and to get that slight edge. The use of this kind of analysis is much further developed in FMCG (Fast moving consumer goods) and brands. Fast fashion is one of market verticals it's applied to; mapping techniques will become progressively more accurate and drive predictive models.

### 2.2 Direct Sources of Information

If you are a large Investment Bank or a Hedge Fund you are going to be tempted to design your own system to achieve that slight advantage. You could be a startup and want to design your business model around Social Media's data, or even a day trader who wants to analyse all tweets on a particular stock. The direct sources of data are:

### 2.2.1 Facebook Graph API<sup>13</sup>

All public data is available via Facebook Graph API or Facebook FQL, you need permission to view conversations.

### 2.2.2 Twitter API

In an ideal world you would want access to the entire twitter stream and then analyse in real time extracting the sentiments on various stocks or subjects that influence markets then start trading on this sentiment. Unless you have considerable financial resources, rumoured to be a reported \$25k per day? you have to purchase data feeds from wholesalers. The alternative is to use Twitter's free API feed which is in the range of 150-350 interactions per hour with a maximum of 100,000 users. The other alternative is to use one of Twitter's data wholesalers discussed below in section 2.3. Twitter provides three main API structures, REST<sup>14</sup>, Streaming<sup>15</sup> and authentication together with a series of certified developer's products, 9 engagement, 11 analytics, and 3 Data resellers<sup>16</sup>. For lower volumes of data you can still go direct to the API, for higher volumes you have to go to Twitter directly and negotiate or go through one of their resellers. Twitter is moving towards a closed loop system; in the medium term the acquisition of Twitter data for serious data mining will have to be done via a reseller.

### 2.2.3 LinkedIn<sup>17</sup>

LinkedIn still has an open policy regarding API passing and extraction of data, for higher data volumes and faster speeds you can apply for additional access<sup>18</sup> their longer term strategy must involve monetisation of these data sources.

### 2.2.4 Google+ and Google<sup>19</sup>

Google provides API access to the majority of its systems within limits; the most common range is 10,000 – 100,000 requests per day. For instance Maps API will cost 50c per 1,000 requests over 25,000. Their prediction API allows 100 requests a day beyond that you have to pay up to a limit of 40,000<sup>20</sup>.

### 2.2.5 Four Square<sup>21</sup>

Extensive API list is available 500 user applications per hour.

### 2.2.6 YouTube<sup>22</sup>

YouTube has an extensive API library, the analytics API is still in beta

### 2.2.7 Tumblr<sup>23</sup>

Very extensive API library very well laid out and clear documentation

### 2.2.8 Blogger<sup>24</sup>

The limits are 10,000 per day

### 2.2.9 Wordpress<sup>25</sup>

Open source 60 million size bloggersphere very decentralised, to capture any useful data specific websites have to be identified. There are plugins to allow data to be exported.

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<sup>13</sup> <https://developers.facebook.com/docs/reference/api/>

<sup>14</sup> <https://dev.twitter.com/docs/api/1.1>

<sup>15</sup> <https://dev.twitter.com/docs/streaming-apis>

<sup>16</sup> <https://dev.twitter.com/programs/twitter-certified-products/products#Certified-Data-Products>

<sup>17</sup> <https://developer.linkedin.com/apis>

<sup>18</sup> <https://developer.linkedin.com/themes/linkedin-home/form-api.html>

<sup>19</sup> <https://code.google.com/apis/console/#project:450922817651:services>

<sup>20</sup> <https://developers.google.com/prediction/docs/pricing>

<sup>21</sup> <https://developer.foursquare.com/overview/>

<sup>22</sup> <https://developers.google.com/youtube/> <https://developers.google.com/youtube/analytics/>

<sup>23</sup> <http://www.tumblr.com/docs/en/api/v2>

<sup>24</sup> [https://developers.google.com/blogger/docs/3.0/getting\\_started](https://developers.google.com/blogger/docs/3.0/getting_started)

<sup>25</sup> <https://wordpress.org/>



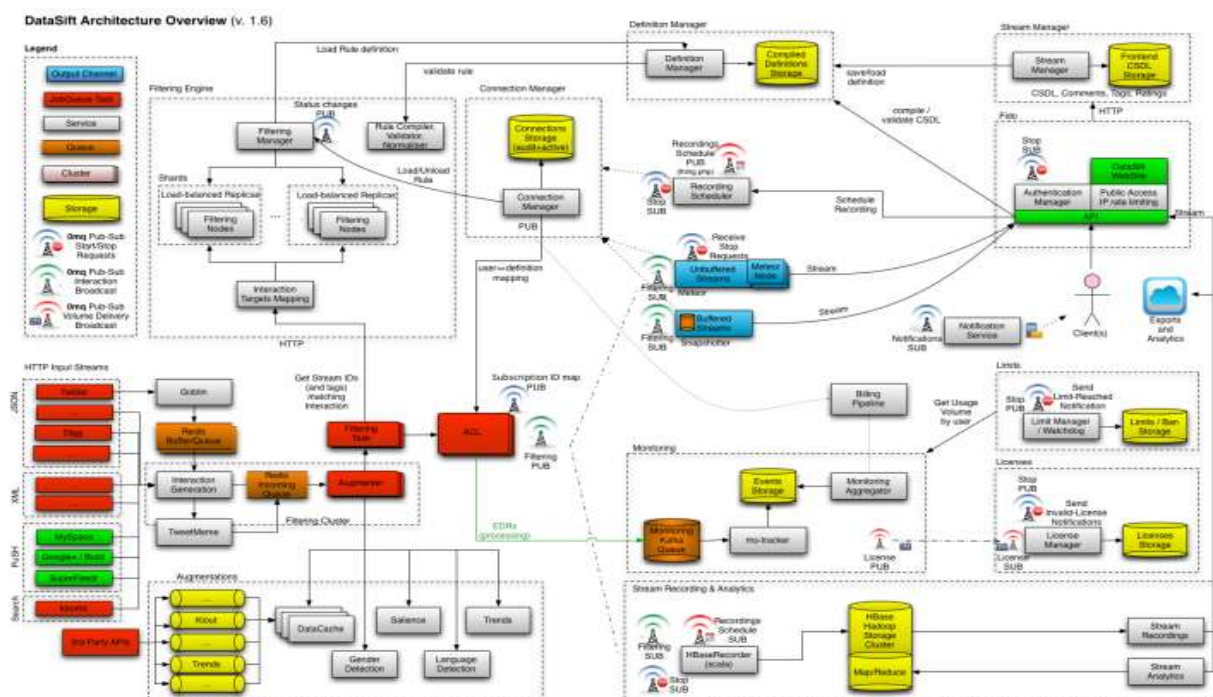
#### 2.2.10 Share dealing bulletin boards/message boards

Some of the UK's key boards are illustrated in appendix 3. Data scraping techniques would have to be used and specific data mining software applied to scraped data to get any useful information.

### 2.3 Indirect - Information Stream Providers

There are a large number of data providers of aggregated social media data. The three main ones are Datasift, GNIP and Topsy as they all have full access to the Twitter Firehose stream of data<sup>26</sup>. Datasift is particularly interesting as it also provides a stream focused on finance. Three traditional financial market information providers are considered, Thomson Reuters, Dow Jones and Bloomberg.

### 2.3.1 Datasift



[http://farm8.staticflickr.com/7159/6408735793\\_0fa14eedf6\\_o.png](http://farm8.staticflickr.com/7159/6408735793_0fa14eedf6_o.png)GNIP

[Datasift](#) is a wholesaler for social media data with a specific feed for finance it has access to the full firehose (Twitters datastream) you can subscribe for full or partial access or only pay for the data you use. The complexities of their business model and software stack can be found in an article in High Scalability.com <sup>27</sup> the graphic above illustrates the complexity of their software stack. Datasift collects data from 16 different sources and provides a specific feed for stocks. It has a very user friendly queries builder and is based in the UK and USA.

### 2.3.2 GNIP

Has full Twitter Firehose data, 19 datasources including Stocktwits, it does no processing of data but provides data according to predetermined filters, parameters or specified blocks or streams. Their software stack is discussed on <http://engineering.gnip.com/> based in Boulder Co.

They have produced a whitepaper “Social Media and Markets”<sup>28</sup> it gives an insight into their thinking on how markets and social media interact.

<sup>26</sup> See appendix 3 for full list of Twitter's certified partners in three categories, engagement, analytics and data reseller.

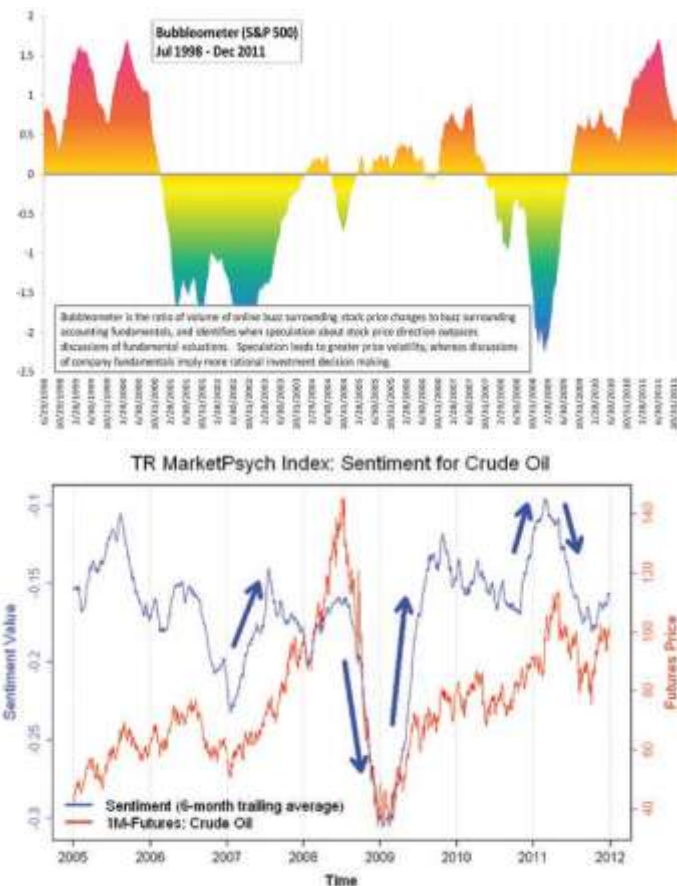
<sup>27</sup> <http://highscalability.com/blog/2011/11/29/datasift-architecture-realtime-datamining-at-120000-tweets-p.html>

<sup>28</sup> <http://gnip.com/docs/gnip-smm-nf.pdf>

### 2.3.3 Topsy

Has full twitter firehose it is different to the other two Firehose providers in that it has a series of 5 analytics suites to apply to its data feeds. An insight into its software stack can be seen in its [blog](#)

Its whitepaper “Predicting stock prices using social sentiment”<sup>29</sup> gives an insight into their thinking; they compared the sentiment on Netflix to its stock price establishing a relationship.



### 2.3.4 Thomson Reuters<sup>30</sup>

Thomson Reuters MarketPsych Indices (TRMIs) are designed to enable users to view and model the impact of investor psychology across global asset classes and regions by analysing the specific attitudes expressed within stories and tracking the macroeconomic themes that are most relevant to price movements in each asset class. It is a partnership with Market Psych LLC<sup>31</sup> Its two underlying principles are Market buzz and sentiment. Market Buzz is the noise around a stock or class of assets.

Sentiment is calculated on a number of poles optimism, gloom, joy, fear, trust, anger, innovation, violence, conflict, stress, urgency and uncertainty". Each pole (index) can be compared to fundamental traditional valuations or as a single combined index. High level questions like 'Are there growing concerns over the stability of the Yuan's peg to the dollar, and what does this mean for the value of the currency?' can be probed. The system sits on top of, Thomson Reuters News Analytics that scours and interprets information from

around 50,000 news sites and four million social media sites and is aimed at high-frequency traders. Aleksander Sobczyk head of quantitative research elektron analytics has produced a very interesting presentation on Understanding the Psychology of the Markets for a recent Sentiment Analysis Symposium<sup>32</sup>

### 2.3.5 Dow Jones – RavenPack<sup>33</sup>

RavenPack is a provider of real-time news analysis services, its skill is the speed and accuracy in analyzing large amounts of unstructured content. Its products are aimed at the Quant, HFT and PT (high frequency trading and programme trading community) as well as analysts and all entities interested in news. It does not publicly state it uses social media data as a feed but it uses the AP Associated Press feed as source data together with at least 50,000 other sources of news. It is interesting because of its taxonomy and how it translates raw unstructured news into what it calls “News Liquidity” then into “Abnormal News Liquidity” then events that drive market movements. It contends that its sentiment rankings and analysis add value to trading strategies and its events that

<sup>29</sup> <http://about.topsy.com/technology/whitepapers/sentiment-nflx/>

<sup>30</sup> [http://thomsonreuters.com/content/financial/pdf/fact\\_sheets/marketpsych\\_indices.pdf](http://thomsonreuters.com/content/financial/pdf/fact_sheets/marketpsych_indices.pdf)

[http://thomsonreuters.com/products\\_services/financial/financial\\_products/a-z/news\\_analytics/](http://thomsonreuters.com/products_services/financial/financial_products/a-z/news_analytics/)

<sup>31</sup> <http://www.marketpsych.com/index.php>

<sup>32</sup> [aleksander.sobczyk@thomsonreuters.com](mailto:aleksander.sobczyk@thomsonreuters.com)

[www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=10&ved=0CHAQFjAJ&url=http://sentimentsymposium.com/SS2012w/presentations/SAS12w-AlexSobczyk.pdf&ei=gO9UP3MJ62b1AWH6oCIDQ&usq=AFQjCNFFp1NeZ3dlojRD6k8cTg-vBOSeUw&sig2=1bjh6r1t\\_1C140aNWxho4g](http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=10&ved=0CHAQFjAJ&url=http://sentimentsymposium.com/SS2012w/presentations/SAS12w-AlexSobczyk.pdf&ei=gO9UP3MJ62b1AWH6oCIDQ&usq=AFQjCNFFp1NeZ3dlojRD6k8cTg-vBOSeUw&sig2=1bjh6r1t_1C140aNWxho4g)

<sup>33</sup> <http://www.ravenpack.com/>

pivot stock movements, it believes it's the last 10-30 events that power a stocks movement. Events can be classified by entity, geopolitical, natural disaster, economic it has powerful NLP (natural language processing techniques to generate tags and metadata which then drive event analysis and prediction.

Raven Pack's research library has further explanation of their techniques and contains research from other sources <http://www.ravenpack.com/research/resources.htm>

### 2.3.6 Bloomberg

Bloomberg uses WiseWindow now part of KPMG analytics for social media sentiment analysis, its news sources are plus 1,000 and 90,000 web site sources.

## 2.4 Unstructured to Structured Data

The systems described above are taking unstructured data, giving it structure through tags, relating it to the external environment via metadata linkages. The professional news gathering companies can then integrate this data into their trading platforms and it can be compared to the very large volumes of historical data. The processed data is used by traders from the terminal or passed on to Quant trading houses to be used in proprietary systems and drive HFT/PT decisions

## 2.5 Crowdsourced Data

Bulletin Boards, comments, posts, likes. There are in the region c200 bulletin boards or comment forums within recognised financial websites in the UK. Illustrations are presented from 5 of the most visible at 17.30, 4 December 2012 to gauge content and traffic.

Name	Web	Comment
ADVM	<a href="http://uk.advm.com/">http://uk.advm.com/</a>	Gulf Keystone Petroleum last mentioned 13.31
III	<a href="http://www.iii.co.uk/community/">http://www.iii.co.uk/community/</a>	Gulf Keystone Petroleum 681 posts 24hrs
Money AM	<a href="http://www.moneyam.com/InvestorsRoom/">http://www.moneyam.com/InvestorsRoom/</a>	Dominated by natural resources talk
Yahoo Message	<a href="http://uk.messages.finance.yahoo.com/yahoo/UK_Stocks/index.html?A=L">http://uk.messages.finance.yahoo.com/yahoo/UK_Stocks/index.html?A=L</a>	Parkmead Group had 1899 posts since inception against 5018 for Lloyds TSB
Motley Fool	<a href="http://boards.fool.co.uk/BestOf.asp?topwhat=brd&amp;numofboards=50&amp;whichboards=stock&amp;whenboards=24hours&amp;submit.x=12&amp;submit.y=9">http://boards.fool.co.uk/BestOf.asp?topwhat=brd&amp;numofboards=50&amp;whichboards=stock&amp;whenboards=24hours&amp;submit.x=12&amp;submit.y=9</a>	20 posts for HighWave Technologies Plc

This table illustrates the complexities of social media data collection: volume, relevance, manipulation, lack of volume. Bloomberg states its 310,000 users of its trading platform pass 200m messages each day.

### Examples of Crowdsourced Social Media data are:

#### 2.5.1 [Starcourt](#)<sup>34</sup>

Non financial website but interesting as it has a range of charts for Brands, celebrities, media, their social media chart displays how brands are performing against celebrities.

#### 2.5.2 [Alchemy API](#)

NLP, sentiment analysis engine that allows users to scrape sentiment and other data from the web. Useful as a site building tool and analysis tool

#### 2.5.3 Social Influence

Kred, Peer Index, Radian 6, Klout are influence measurer's, their rang and scope is displayed in appendix 2

<sup>34</sup> <http://www.starcourt.com/chart/global/alltime>

## 2.6 Open Source

There are a number of open source software resources.

This section is more technical and gives an insight into some of the sources of the software and theory that underpins how data is extracted from social networks and then made useful. If you have the skill to extract data from Twitters API you can start to develop network maps similar to 2.1 this could provide you with the first beta section of a potential business model.

### 2.6.1 Node XL

[Node XL](#) – Network mapping data from excel spreadsheet data

[Gallery of Node XL Graphs](#) – studying this gallery is an excellent way of gaining inspiration of how networking mapping can be used to create new methods of understanding

### 2.6.2 Networking of threaded Conversations

Excellent [paper](#) by Hansen, Shneidermann & Smith this analyses how groups form networks and the interrelationships between. A good starting point if you are going to build a system to exact how groups of people trade from social network data.

### 2.6.3 JISC Cetis<sup>35</sup> / Martin Hawksey

JISC CETIS (the Centre for Educational Technology and Interoperability Standards) provides advice to the UK Higher and Post-16 Education sectors on educational technology and standards it is a joint research project between Universities of Bolton and Strathclyde. As an adjunct to their work the researchers have done excellent work on the analysis of the impact of social media. Martin Hawksey Strathclyde University participates from in this project. Martin's blog <http://mashe.hawksey.info/> is a goldmine of information on sources and examples of how to mine social media data and then analyse it for information value. On the JISC website there are some excellent discussions on the value of analytics. **Note:** you have to put some work into understanding what is being discussed from these sources, firstly they are academic, what to extract so that value can be created, and the way the techniques and ideas described can be applied to financial services. Particularly relevant to the JISC Cetis website, Martin's blog is more understandable. Entrepreneurism isn't easy, a point of reflection is that Google emerged from a similar source.

### 2.6.4 [www.Graph-database.org](http://www.Graph-database.org)

An excellent source of Graph and network analysis tools and resources.

## 2.7 Entrepreneurial Opportunities

- The field of data collection for financial social media is open, the large financial data vendors are there but they can't collect and analyse all the data.
- Cloud vendors such as Datasift make Financial Social Media data acquisition possible at much lower costs. You don't have to be large to competitive.
- All aspects of the information supply chain are open for innovation
- Compete with the major players, becoming a supplier to traditional data vendors
- Specialise in generating Social Media data in selective market segments by asset class, company or commodity.
- Become ultra specialised information collector for instance 12 month Light Crude and sell your information feed to the specialist information providers on commodities.
- Widen data collection beyond traditional Social media sources i.e. into scraping of bulletin/message boards
- Develop systems for regulators, compliance and audit
- Social Media network data and behavioural understanding a field in its infancy develop a skillset
- Open Source solutions – powerful tools and experience from other fields that can be applied in Financial Services and Capital Markets
- The skillsets and centres of expertise are still within academia – find and commercialise

<sup>35</sup> <http://jisc.cetis.ac.uk/>



### 3.0 Social Media Analytics

#### 3.1 Analysis of social media to be able to extract valuable tradable data from it.

What are the metrics of social media to be able to extract value from its data. The basic problem is the one of big data, you have too much information that changes too quickly, the key linkages or drivers of change and markets get lost in the noise or you follow the noisiest sentiment (the loudest voice).

#### 3.2 Major News Providers

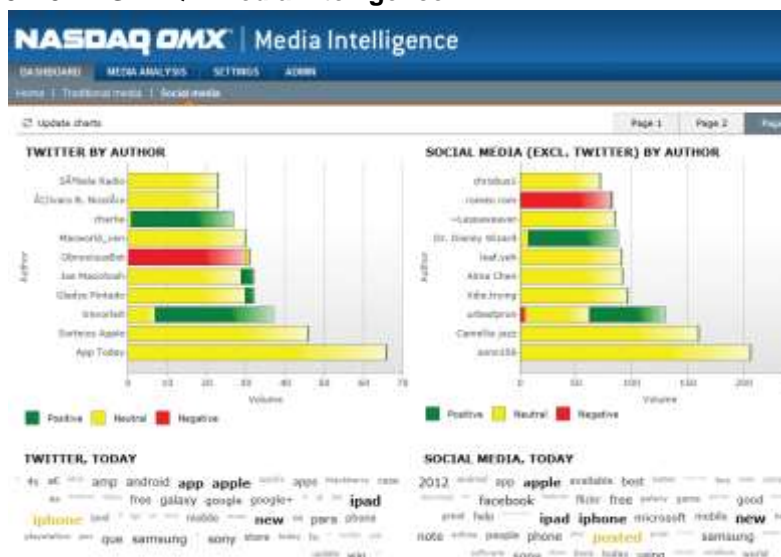
##### 3.2.1 Thomson Reuters

Reuters Marketpsych indices adopt a time series index approach and separates buzz (noise) from sentiment. Sentiment is polled on a number of axis, Fear, Trust, Uncertainty, Joy. Indices integrate with normal news analysis service, indices designed to be grabbed by algorithmic trading systems to drive custom trading strategies.

##### 3.2.2 Ravenspack – Dow Jones

Concept of abnormal news liquidity, around events, their theory is that if you use 10-30 of the last abnormal news events a relationship to predict future events is established.

##### 3.2.3 NASDAQ – Media Intelligence<sup>36</sup>



- NASDAQ offers an integrated social media analysis feed. Real-Time Media Monitoring and Evaluation – Provides media insights and intelligence across print, online, broadcast and social media outlets so communications professionals can rapidly identify trends.
- Tonality – Automatically analyzes the tone of each article using Advanced Natural Language Processes.
- Engagement and Influencer Identification – Allows communications professionals to engage tweeters directly from within the Media Intelligence platform and

quickly identify influential users through integrated displays of Klout and PeerIndex social metrics.

Business Intelligence – Advanced analytics offering media statistics (traditional and social), geographical insights and dynamic charts that drill down to the underlying data

### 3.3 Specific Social Media Monitoring Sites

To illustrate the field 11 Social media monitoring sites are reviewed to give examples of the approaches being used.

**3.3.1 Dataminr** – differential depends on their in-house algorithm to identify trends of event occurrence, displays results by time series graph of activity and individual tweets

**3.3.2 Repknight (Belfast)** – User driven keyword sequence and positive and negative time series

**3.3.3 Viral Heat** - Time series analysis of tweets and social media sentiment positive and negative

<sup>36</sup> <http://www.nasdaqomx.com/corporatesolutions/communications/mediaintelligence/>



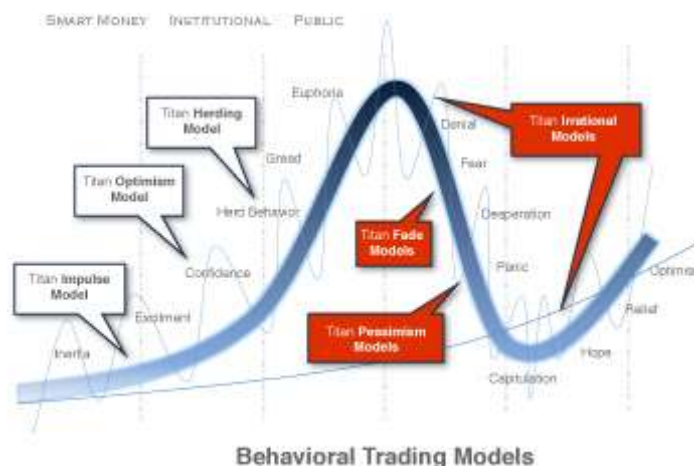
**3.3.4 Hootsuite** – Time series and sentiment analysis, 40 custom modules already worked out, plus a social media [compliance suite](#) for financial professionals US

### 3.3.4 Sysomos highly professional Social Media trends monitoring solutions company

based on research developed from the University of Toronto. Time series buzz and sentiment analysis, influence graphs and competitive comparison

### 3.3.5 Titan Trading Analyst - Tick Analyst innovate approach, based on historical tick movements of market and individual stocks blended with a

behavioural approach. Stream can be provided directly for HFT models or for as an alert for human trading decision making. Complex event processing engine with 10yrs work of trading data drives event alert process.



### 3.3.6 Knowsis

Social media API specifically designed to extract Financial/Trading data for traders and FS professionals

### 3.3.7 FTSEE

Event driven dash board designed for traders, alerts when search engine pick up abnormal activity

### 3.3.8 Union Metrics

Tweet reach metrics – will create a picture of the reach of a single tweet

**3.3.9 Piggem** a crowd source stock sentiment monitoring site – time series of sentiment together with alerts of stock changes.

### 3.3.10 **Sntmnt** Provides an API that extracts analysis of tweets about financial markets.

### 3.3.11 Hedgechatter focusing on extracting financial sentiment from social media

### 3.4 Other providers of Social Media sentiment

### 3.4.1 Protegent SEC approved Social media compliance software

**3.4.2 Streambase** is more complete solution bring together all data inputs for a trading environment and putting the data through a complex event analysis engine to advise trading systems of need for action

### 3.4.3 Coverseon - well executed brand social media monitoring platform enterprise or SaaS

### 3.4.4 Brand Embassy – focused on picking up customer interaction data

### 3.4.5 Page lever

**3.4.6 Salesforce Radian6** part of the salesforce suite do not analyse trading but have built a beautiful info-graphic on British Banks by analysing social media in June through August 2012, see appendix 6

### 3.5 Entrepreneurial Opportunities

- Social Media metrics are simplistic. Based upon time series or volume analysis with semantic analysis of single words or common phrases. Build more complex models that extract more value
- Develop cloud based systemic models with predictive analytics giving ranges of outcomes
- Aggregator /consolidation of metrics from many different sites
- Social Media command centres similar to provided by [Radian 6](#) for FMCG for trading rooms
- Focus on development of analytics for a specific financial market or stock – sell the feed to a major news feed or the specialist trading community, e.g. LNG or Wheat shipments by sea – effects freight rates in Baltic exchange and the price of wheat/LNG internationally and in local markets
- Develop network mapping analytics for trading desks
- New forms of visualisations of trading and markets
- Identify more accurately event actionable situations using neural networks, AI
- Sell Social Media data streams to traditional media channels as content

#### **4.0 How do you Trade on the basis of Social media data (see notice below <sup>38</sup>).**

Once you have processed the data being generated by Social Media sources or made it a feedstock for complex, AI or neural network systems how you use it to drive trading strategies.

This section is discussed on the basis that you trade in a manual mode, manual/machine or fully automatic way<sup>37</sup> the underlying principles are similar but HFT (High frequency trading) is much faster and can crunch more data.

#### **4.1 Events**

Events drive market movements, analysis of the scale of the event in the content of a trading security could indicate the probabilities of a rise or fall is more likely. Various trading strategies have been developed on this theory one example is Ravenpack discussed above which feels that a pattern of events can be used as a predictor.

#### **4.2 Sentiment**

Sentiment is a powerful force but an unsure signal as it tends to generate overreaction according the various research papers but for short term trading it cannot be ignored.

#### **4.3 Buzz**

Volume and kind of Buzz has been seen as a predictor in some of the academic papers disused in section [1.5](#).

#### **4.4 Behavioural**

Certain market analysts believe all trading is behavioural and therefore overreacts that's why technical analysis and HFT/PT provide better methods of establishing fundamental value and shot term opportunity. Tick analyst is an illustration of a behavioural (sentiment approach)

#### **4.5 Location and Time**

Location of trading and when it occurs are vitally important signals for trading tactics; Wall Street has the greatest impact on the worlds markets being able to pick up trends from social media before they find their way into markets could be valuable trading signals

#### **4.6 Profiles**

Who is trading what is a valuable indicator, now you can see an individual's trades on eTorro and follow their commentary on what and why they are trading, their strategy through the internal comments board or looking at their twitter feed.

#### **4.7 Entrepreneurial Opportunities**

- Network profiling of location of trades
- Split trades between man and machine to establish the different market performance of machine v machine or man v machine
- Academic – need for a sustainable body of literature to develop on whether there are linkages between social media information flows and stock prices
- Need for more complex trading predictive models beyond event driven or sentiment and Buzz
- Regulatory and compliance monitoring of trading. Big market for real time compliance tools
- Create composite indices of sentiment and buzz from all the worlds markets
- Decomposition of social media sentiment and buzz into location to identify market influencers
- Integration of generic social media comment on brands, FMCG, Corporations into more specific trading signals and stock symbol sentiment analysis.

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<sup>37</sup> Nothing in this section represents any form of trading or investment advice but is an academic discussion of the subject of trading using social media data. Do not use any or take actions on any of the information provided see legal disclaimer on page x.

## 5.0 Trading in social groups.

In the era of the electronic market with very much lower levels of open outcry trading left how do you trade in Social Groups?

### 5.1 Techniques of Social Trading<sup>38</sup>

This report does not go into the detail of various stock trading strategies. The overall concept of social trading is to use information signals from a group, individual or the reactions of other individuals to make trading decisions. As the core information comes from unregulated and in many cases unknown sources any trading strategy developed is exceptionally high risk, see notice<sup>38</sup>. There have been many cases of regulatory intervention against individuals for insider trading and attempted fraudulent manipulation of stock prices from these sources.

### 5.2 Voice Feeds

You can get voice feeds from the remaining open outcry markets and get the feel of the pit, watching the trading performance of other individuals on a number of trading platforms, or more formally follow professional traders or investment managers.

Squakbox for Traders feeds are available from [Traders Audio](#) and other sources you can really feel you're in the pit and trade reactively with or against the voice feed as compared to an electronic feed on your desk.

### 5.3 Trading Websites<sup>38</sup>

#### 5.3.1 Trefis<sup>38</sup>

Crowdsourced sentiment and data on stocks with divisional breakdown of Revenue, adjusted EBITDA, Total Cash Flow. An example of one of their tables showing stock predictions from their members

AIG – market price \$32.60, Community Models - 27% Bearish, 73% Bullish, Average \$21.96				
NAME	TITLE	AIG PRICE	FORECASTS / COMMENTS	
Tim Chklovski	Factual	\$71.01	7 / 0	<a href="#">View Model</a>
Vaclav Podzimek	VGD	\$50.82	3 / 0	<a href="#">View Model</a>
Trammel Martin	Global Value Expl...	\$24.91	3 / 0	<a href="#">View Model</a>
Larry Danielson	Partner, Deloitte	\$32.63	2 / 0	<a href="#">View Model</a>
Mohit Kabra	Senior Associate,...	\$30.59	2 / 0	<a href="#">View Model</a>
Jed Bennette	Researcher	\$34.76	1 / 0	<a href="#">View Model</a>
S B	consultant, DB	\$31.79	1 / 0	<a href="#">View Mode</a>

#### 5.3.2 TweetTrader.net<sup>38</sup> powered by [Stockpluse](#)<sup>38</sup>

Crowdsourcing of Sentiment and displaying a live feed of tweets and other trading data. Even five years ago this kind of information would only in the domain of the most advanced trading desk.

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<sup>38</sup> For education and illustrative purposes only not intended to be an investment guide. If you are considering any form of investment seek advice from a FSA approved Financial Advisor. Never follow any advice given on a bulliten board or social trading website. There is no endorsement given whatsoever of any of the websites quoted.

### [5.3.3 Stocktwits](#) <sup>38</sup>

A site giving an overview page, [streams](#) and [heatmap](#) with analysis functions by person and stock. A league table displays the successful eTorro traders for the stock or sector you are examining. Its heatmap of stocks is extensive, again a step change in the quality of trading tools provided.

### **5.3.4 eTorro** <sup>38</sup>

A professionally presented site with an open book presentation of all trades, ranking of best traders, the most copied traders highest scores 6,893 followers. Trading tools are extensive and there is a live comments stream from members.

### **5.3.5 Tradeking** <sup>38</sup>

An on line broker with extensive tools, members soapbox and other many other feeds.

### **5.3.6 Piqqem** <sup>38</sup>

Crowd sourced sentiment analysis

### **5.3.7 Seeking Alpha** <sup>38</sup>

Load portfolio on to site c1m users get feed and alerts when news occurs on stocks in portfolio.

## **5.4 Financial Bulletin Boards** <sup>38</sup>

[III](#), [ADVFN](#), [MoneyAM](#) are illustrative of UK bulletin boards that allow comment on the UK Stockmarket, the total number of these boards are in excess of 100+

## **5.5 Following other Traders** <sup>38</sup>

**5.5.1** [ETorro](#) produces a real time searchable list of its top traders by a number of criteria

### **5.5.2 List of top Twitter Traders** <sup>38</sup>

Certain traders have become trading stars; illustrations are displayed in Appendix 6

Jim Cramer now has 601,493 followers founder “the Street”, Paul Kedrosky – Investor 233,241, Howard Lindzon founder Stocktwits 230,499 whatever you think about the investment tactic of following an individual; Twitter gives these individuals a global reach that previously was unavailable.

### **5.5.3 Covestor** <sup>38</sup>

Covestor is a new form of fund management. Your fund mirrors the trading of 159 professionally picked fund managers; you pick an investment model and manger that meets your own financial goals. The will also sell you the trading data and you can source your own investment management and trading resources.




























## **5.6 Entrepreneurial Opportunities**

- Develop structured data feeds for retail investing market
- Scrape bulletin boards and share trading sites to produce composite sentiment indices and sell them to professional news feeds
- Develop HFT & PT tools for retail market that incorporate Financial Social Media feeds
- Use data from personal trading systems Social Media to drive regulation and compliance systems
- Aggregate Financial social media feeds as form as news comment news service
- Produce real time ranking of star traders and sell as a news feed

## 6.0 Sources

Web sites of the companies listed in the report Press releases and press reporting on their web sites Web Sites of any of the companies/ organisations mentioned. Twitter Venture Beat Financial Times Duedil All things D Mashable Tech Crunch SEC Edgar Companies House Seedtable GigaCom Techradar Yahoo - Finance Reuters Startups.alltop WJ.com Reuters.com Bloomberg Forbes.com <a href="http://www.inc.com">www.inc.com</a> Innotribe start-ups Finnovate	HMRC Huffington Post  Forbes  BBC Technology review Pinterest Crunch Base Google Facebook Linkedin Long Finance Tech Crunch CNET News Engadget Wired ZD Net eWeek Hacker News Wikipedi
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## Appendix 1 - Facebook influence 2 December 2012

Facebook most liked			Facebook most talked about week ending 2 December 2012		
Bank Financial Institution			Bank/Financial Institution		
Rank	Name	<u>Total Likes</u>	#	Name	<u>People Talking About</u>
1	 <a href="#">Itaú</a>	3,536,134	7	 <a href="#">Santander México</a>	22,099
2	 <a href="#">Bradesco</a>	2,708,274	14	 <a href="#">Quicken Loans</a>	11,783
3	 <a href="#">Garanti Bankası</a>	1,214,627	9	 <a href="#">Visa Colombia</a>	18,647
4	 <a href="#">Akbank</a>	1,184,165	15	 <a href="#">Yapı Kredi</a>	11,510
5	 <a href="#">ICICI Bank</a>	994,743	11	 <a href="#">SCB CREDIT CARD</a>	16,824
6	 <a href="#">GTBank</a>	787,201	22	 <a href="#">Prudential Corporation Asia</a>	7,849
7	 <a href="#">IDBI BANK</a>	736,285	20	 <a href="#">Banco Industrial</a>	9,283
8	 <a href="#">RBS 6 Nations</a>	726,119	24	 <a href="#">招財納福•啱啱</a>	6,440
9	 <a href="#">CIMB Malaysia</a>	704,315	12	 <a href="#">SBI Card</a>	13,575
10	 <a href="#">Bank of America</a>	699,879	16	 <a href="#">CIMB Malaysia</a>	10,670
11	 <a href="#">Axis Bank</a>	663,962	25	 <a href="#">Unibank</a>	5,904
12	 <a href="#">Banamex</a>	517,270	21	 <a href="#">Banco Bisa</a>	9,002
13	 <a href="#">HDFC Bank</a>	468,254	23	 <a href="#">COOPERATIVA JEP</a>	7,656
14	 <a href="#">TEB</a>	462,914	8	 <a href="#">Banco Ciudad</a>	19,220
15	 <a href="#">Santander Brasil</a>	457,951	19	 <a href="#">Santander Brasil</a>	9,369
16	 <a href="#">Citibank India</a>	455,389	2	 <a href="#">Navy Federal Credit Union</a>	29,719
17	 <a href="#">CIMB Indonesia</a>	452,644	17	 <a href="#">DBS星展銀行</a>	9,978
18	 <a href="#">Citi</a>	440,723	4	 <a href="#">Banco Galicia</a>	24,046
19	 <a href="#">Citi Brasil</a>	438,876	26	 <a href="#">BLC Bank</a>	4,053
20	 <a href="#">Bonus Card</a>	418,711	13	 <a href="#">HDFC Bank</a>	12,536
21	 <a href="#">USAA</a>	382,216	29	 <a href="#">Paga</a>	3,334
22	 <a href="#">DenizBank</a>	374,463	10	 <a href="#">SCB Thailand</a>	17,997
23	 <a href="#">Banco Galicia</a>	365,438	27	 <a href="#">Multibanca Colpatría</a>	3,910
24	 <a href="#">Tarjetas Cancheras</a>	357,921	6	 <a href="#">We prestame 1 peso xD</a>	22,919
25	 <a href="#">BBVA Continental</a>	353,353	3	 <a href="#">ALJ Installment and Leasi...</a>	24,937
26	 <a href="#">Franklin Templeton India</a>	353,090	30	 <a href="#">BNP Paribas Net</a>	2,583
27	 <a href="#">Navy Federal Credit Union</a>	350,333	28	 <a href="#">UniCredit Bank Bosna i He...</a>	3,413
28	 <a href="#">Multibanca Colpatría</a>	341,078	1	 <a href="#">KBank Live</a>	62,900
29	 <a href="#">KBank Live</a>	339,446	5	 <a href="#">Banco de Crédito BCP</a>	23,865
30	 <a href="#">Santander México</a>	334,091	18	 <a href="#">RBS Scottish Rugby</a>	9,508

Source: [http://pagedata.appdata.com/pages/leaderboard/tac/tac\\_wg/type/465](http://pagedata.appdata.com/pages/leaderboard/tac/tac_wg/type/465)

[http://pagedata.appdata.com/pages/leaderboard/fc/fan\\_count/type/466](http://pagedata.appdata.com/pages/leaderboard/fc/fan_count/type/466) 2 December 2012



## Appendix 2 Generic Social Influence Websites

**Figure 8. Influence Tracker Features: Relevance**

Features	Kred	PeerIndex	Radian6	Klout
Score	✓	✓	✓	✓
Reach	✓	✓	✓	✓
Topical Relevance	✓	✓	✓	✓
Resonance	✓	✓	✓	✓
Intelligence/Trends	✓	✓	✓	✓
List Development	✓	X	✓	✓
Influencer Relationship Management	✓	X	✓	✓*
Campaign Management	✓	X	✓	✓
Engagement Metrics	✓	X	✓	✓*
Networks Tracked	Twitter	Blog RSS, Twitter, Facebook, LinkedIn, Quora, YouTube	Blog RSS, Twitter, Facebook, LinkedIn, YouTube	Twitter, Facebook, LinkedIn, Foursquare, and Google+ are factored into the Klout Score. Users can connect to YouTube, Instagram, Tumblr, Blogger, WordPress, Last.fm and Flickr (although not yet scored)
Free or Paid	Free	Free	Paid only (Offers free)	Free

\* Provided as a custom service for Klout clients, not as part of a standard dashboard.

Source <http://www.slideshare.net/Altimeter/the-rise-of-digital-influence>. Techcrunch 21 March 2012

### **Appendix 3 Share Trading Sites UK – illustrative list**

fastrade  
Frequent Trader  
Hargreave Hale  
idealing  
iweb  
J & E Davy  
Lloyds TSB  
NandP  
Share Centre  
ShareDeal  
Stocktrade  
Tullett Prebon

Abbey/Santander  
Accrue Investments  
Alliance Trust  
Barclays MarketMaster  
Barclays BARXdirect  
Capital International  
Charles Schwab  
first direct  
first equity  
Fidelity  
FXCM  
Guardian Stockbrokers  
Halifax  
Hartmann  
Hargreaves Lansdown  
HB Markets  
HSBC  
iii/Shareprice  
Interactive Brokers  
Natwest/RBS  
Padealing Box  
RBS/Natwest  
Saxo Bank  
Selftrade  
Seymour Pierce  
Shareprice/iii  
Simply Stockbroking  
SIPP  
Sudgen SMART  
TD Direct Investing  
X-O

## Appendix 4 NodeXL – Map word “Insurance”

20120928 #insurance Twitter NodeXL SNA Map

<http://nodexlgraphgallery.org/Pages/Graph.aspx?graphID=1257>

The purpose of this table is to illustrate the very rich data that can extract from network analysis and mapping of tweets.

From: marc\_smith - Uploaded on: September 28, 2012

Description:

The graph represents a network of **604 Twitter** users whose recent tweets contained "#insurance". The network was obtained on Friday, 28 September 2012 at 15:31 UTC. There is an edge for each follows relationship. There is an edge for each "replies-to" relationship in a tweet. There is an edge for each "mentions" relationship in a tweet. There is a self-loop edge for each tweet that is not a "replies-to" or "mentions". The tweets were made over the 21-hour, 55-minute period from Thursday, 27 September 2012 at 17:18 UTC to Friday, 28 September 2012 at 15:14 UTC.

The graph is directed.

The graph's vertices were grouped by cluster using the Clauset-Newman-Moore cluster algorithm.

The graph was laid out using the Fruchterman-Reingold layout algorithm.

The edge colors are based on relationship values. The edge widths are based on edge weight values. The edge opacities are based on edge weight values. The vertex sizes are based on followers values. The vertex opacities are based on followers values.

Overall Graph Metrics:

Vertices: 604

Unique Edges: 3701

Edges With Duplicates: 1136

Total Edges: 4837

Self-Loops: 1396

Reciprocated Vertex Pair Ratio: 0.460635058721183

Reciprocated Edge Ratio: 0.630732578916021

Connected Components: 164

Single-Vertex Connected Components: 150

Maximum Vertices in a Connected Component: 419

Maximum Edges in a Connected Component: 4478

Maximum Geodesic Distance (Diameter): 11

Average Geodesic Distance: 3.477063

Graph Density: 0.00921990489055825

Modularity: 0.328287

NodeXL Version: 1.0.1.225

Top 10 Vertices, Ranked by Betweenness Centrality:

ClearRisk

PolicyParables

insurance\_news

johncenawwe81

efinancial

insurancelead

InsTimesNews

InsurAdvice

McK\_CMSOForum

africainsurance

Top Replied-To in Entire Graph:

healthfinder

foundationpros

calcasinsurance

healthcaregov

minknh

chubbinsurance

\_demotech

anjavanstaden

















giffordottawa

bforbuttox











## Appendix 5 Twitter Certified Partners

Updated on Mon, 2012-11-19 10:33

### Certified Engagement Products

Product	Description	Badges
<a href="#">Attensity</a>	Attensity Respond provides a real-time view of the conversations that are happening right now on Twitter by identifying the trends developing in those conversations, before they become issues.	 
<a href="#">ExactTarget</a>	ExactTarget allows you to support an unlimited amount of social media conversations. Begin keeping records of customer interactions on Twitter to help reveal consumer preferences, archive past support assistance, and more.	 
<a href="#">HootSuite</a>	HootSuite allows you to send and schedule Tweets, listen using search, list and keyword tracking streams, as well as monitor Mentions, Direct Messages, Sent Tweets, Favorited Tweets, and more in dedicated streams.	 
<a href="#">Mass Relevance</a>	Mass Relevance is a social integration platform enabling producers and marketers to aggregate, filter, and integrate real-time social content into virtually any brand or media experience.	
<a href="#">Radian6</a>	Radian6 helps your company listen, engage, and measure your outreach across teams and departments.	 
<a href="#">Spredfast</a>	Spredfast is a social media management company that helps brands improve productivity and drive engagement in their social programs and campaigns.	 
<a href="#">Sprinklr</a>	Sprinklr helps gauge the interests of an audience, join conversations, create long-term relationships, prioritize responses, facilitate real-time customer support, and mitigate potential crisis.	 
<a href="#">Sprout Social</a>	Sprout is a social media communication hub that allows businesses to more effectively connect with their audience through social channels like Twitter.	 
<a href="#">SocialFlow</a>	SocialFlow's platform optimizes delivery and evaluates your messages in real time, publishing items at the precise moments when they will maximize clicks, Retweets, mentions and follower growth.	

### Certified Analytics Products

Product	Description	Badges
<a href="#">Attensity</a>	Attensity Analyze continuously monitors and analyzes conversations on Twitter helping you track and analyze ongoing relevant conversations about your brands, products, competitors, and more, identify influential opinion leaders and sources, understand sentiment and issues, and keep on top of industry trends.	 
<a href="#">Crimson Hexagon</a>	Crimson Hexagon delivers an accurate view of how engaged online consumers truly think and feel about a brand or issue.	
<a href="#">Dataminr</a>	Dataminr's analytics engine transforms social media streams into actionable signals for clients in the financial and government sectors, providing one of the earliest warning systems for market-relevant information, noteworthy events and emerging trends.	
<a href="#">ExactTarget</a>	ExactTarget helps identify metrics from Twitter campaigns so success is measured with actual results with reporting, Rollup Views that combine multiple reports, and the Export to Excel function, so you can always turn your results into tangible data.	 
<a href="#">HootSuite</a>	HootSuite provides an overview of your Twitter account by tracking the number of followers, following, lists, mentions; comparing keywords over time; monitoring and Twitter sentiment.	 
<a href="#">Radian6</a>	Radian6 provides enhanced demographics, in-depth sentiment analysis, natural language processing, and discovery of online influences, emerging issues, and trending topics.	 

Product	Description	Badges
<a href="#">Simply Measured</a>	Simply Measured makes it easy to get all your social media data in one place and create beautiful reports in Excel and on the web.	
<a href="#">Spredfast</a>	Spredfast is a social media management company that helps brands improve productivity and drive engagement in their social programs and campaigns.	 
<a href="#">Sprinklr</a>	Sprinklr helps gauge the interests of an audience, join conversations, create long-term relationships, prioritize responses, facilitate real-time customer support, and mitigate potential crisis.	 
<a href="#">Sprout Social</a>	Sprout is a social media communication hub that allows businesses to more effectively connect with their audience through social channels like Twitter.	 
<a href="#">Topsy</a>	Topsy helps online publishers understand what keywords and links are most popular right now on the social web and provides publishers with highly relevant, influence-ranked, brand-safe content that they can link to their site, further increasing page views and other engagement metrics.	 
<b>Certified Data Reseller Products</b>		
<a href="#">DataSift</a>	DataSift creates filters through their API to deliver the Tweets you need from Twitter's Firehose on keywords, location, sentiment, influence and other meta-data attached to each Tweet.	
<a href="#">Gnip</a>	Gnip provides enterprise-grade access to the full firehose of public Tweets so partners can build Twitter-enabled applications with the foundation of Tweets needed. Partners can access the complete historical archive of public Tweets as well as the full firehose in realtime.	
<a href="#">Topsy</a>	Topsy Data Services provide access to all publicly available tweet content over multiple years together with proprietary measurements that quantify the volume and characteristics of communication for any keyword, term or domain of interest.	 

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## Appendix 7 Top 25 Traders On Twitter Top 5 Illustrated

Posted In Best Of The Web, Blog, Top Lists <http://www.optionstradingiq.com/> [see note below](#)

Twitter is a fantastic place to find trade ideas and check what's happening in the markets. The problem is, there is a lot of noise and a lot of spammers. So how do you separate the wheat from the chaff? It was no easy task, but I've separated the top 25 traders who provide the best advice, insights and articles. The order is put together through a combination of frequency of posting, total followers and the usefulness of their tweets. If you think I've missed any exceptional traders off the list, please let me know in the comments at the bottom. You can follow this list of traders by following the [list I set up on Twitter](#).

### 1 - [Howard Lindzon](#) - 222,468 Followers - [@howardlindzon](#)



**howardlindzon**  
@howardlindzon  
CEO/Co-Founder of Social Leverage (Angel Investing), Wallstrip creator (purchased by REXX), Momentum, Accelerator & L2M Partner, Live Pigeon.  
LA Office: 310.200.0000 | <http://www.howardlindzon.com>

The Grand Daddy of them all. A rock star entrepreneur, Howard Lindzon has crushed everything in his wake, and seemingly anything he touches turns to gold. He is perhaps best known as the CEO and Co-founder of , which was ranked as one of the top 50 websites of 2010 by [TIME](#) magazine. If that isn't enough, he has also managed a hedge fund since June 1998 and is a GP of [Social Leverage](#). In October 2006, he created Wallstrip, a daily business satire news video podcast that was bought out by CBS in May 2007. He has also authored two books, *The Wallstrip Edge* and *The edge* and made seed investments in numerous successful online ventures.



**Brian Shannon**  
@alphatrends  
Stock Market Trader, Author of Technical Analysis Using Multiple Timeframes  
Denver | <http://www.alphatrends.net>

### 2 - Brian Shannon - 43,718 Followers - [@alphatrends](#)

Unlucky not to get the number 1 spot. Brian is someone I have admired and followed for a long time, even before I started using twitter. [AlphaTrends.net](#) just celebrated its 6th year and in that time Brian has helped countless traders. Brian is by far and away **THE BEST** technical analyst on the web and is the author of [Technical Analysis in Multiple Timeframes](#). He provides a free market update video once or twice per week which is one I try and watch every time. His [YouTube](#) channel has over 3 million views and 9,600 Subscribers. Despite his rather hideous twitter background (sorry Brian), he is a must follow for every trader.



**Paul Kedrosky**  
@pkedrosky  
Investor, Journalist, Author of *Flammable Lights*, etc.  
LA Office, CA | <http://www.paulkedrosky.com>

### 3 - Paul Kedrosky - 208,692 Followers - [@pkedrosky](#)

Rounding out the top 3 is Dr. Paul Kedrosky. With a Ph.D. from the University of Western Ontario, an M.B.A. from Queen's University, and a B. Engineering from Carleton University, you know this is one smart guy. He is the author of [Infectious Greed](#), one of the most popular business blogs and he has also been featured in the Wall Street Journal, the Economist, Harvard Business Review, CNN, PBS Newshour, ABC Nightline, and the New York Times, CNBC, and Bloomberg. Dr. Kedrosky is a Senior Fellow at the Kauffman Foundation and is has been very successful as a seed investor in numerous ventures. Paul is the most active on the list with nearly 55,000 tweets.

### 4 - Steve Grasso - 12,101 Followers - [@grassosteve](#)

Steve Grasso started his career in 1993 with Bear Sterns working on the floor of the New York Stock Exchange. In 1999 he then move to Stuart Frankel & Co. where he is currently the Director of International Sales. Steve is very active on twitter and posts market commentary numerous times throughout the day. A well known and popular personality on the NYSE floor, this CNBC Fast Money regular also stars in the hit AMC show *Mad Men* in his spare time ([see picture](#)). Out of this list probably the person I would most like to meet as he just seems like a bit of a dude.



**Steve Grasso**  
@grassosteve  
Director of Institutional Sales Trading at Stuart Frankel & Co. Inc.  
Governor on the NYSE CNBC Market Analyst, regular on FAST MONEY/REALTIME REPORT  
New York



**Chess**  
@chessNwine  
Full-time Stock Trader/Market Commentator: iBankCoin Equity Partner, Co-Director of i1031 Service-Join for details. My Blog: <http://iBankCoin.com/chessNwine/>  
12011 Trading Group in The PPT  
<http://i12011.ppt.iBankCoin.com/charities.html>

### 5 - [ChessNwine](#) - 7,100 Followers - [@chessNwine](#)

ChessNwine is a full time trader and market commentator who is very active on twitter and on his [iBankCoin blog](#). With his insightful market commentary and daily video analysis, it's not hard to see why he has a very loyal following. Out of his 29 reviews on [Investimonials](#), 24 of those are 5 star which

**Note:** Traders illustrated for educational purposes only do not follow their trading patterns or profiles they have no validity or validated track record and operate in a completely unregulated environment. If you are considering investing you must seek advice from an appropriately qualified and licenced FSA approved Independent Financial Advisor (IFA).