uTrade Solutions

Indian Financial Markets Update

H1 2016

16th Aug, 2016

2016 – A Bagful of Surprises

Indian markets have seen ups and downs so far during the year 2016. While Q1 CY2016 was good trading period (usual anticipation in the beginning of the year), whereas Q2 CY2016 (post an average budget) was sluggish and start to Q3 CY2016 (post a strong monsoon and GST reform) has started fairly positively.

Retail participation in Indian capital markets picked up in mid cap stocks with the mid cap index trading at an all- time high.

Sebi's suggestions on reforming algo trading in India has been in discussion across all Indian markets stakeholders. We provide a detailed analysis on all ideas proposed in the recent SEBI paper.

Brexit turned out to be a shocker of a development that shook the UK, Europe and the rest of the world. While we do not believe it's going to have a major long-term impact (consider the lack of any unions across Asia and other continents), but it may end up as an ugly divorce that can push the UK into recession in the near term.

US elections dominate the agenda and the potentially surprising victory of Donald Trump is not being ruled out yet. Especially after Brexit, the unthinkable seems to be possible now. The US Fed is likely to raise rates and hence impact the funding cycles of all corporates including start-ups (especially those in the Fintech space which may witness a tougher capital access cycle for the first time).

Among the emerging countries, China continues to grow (at least superficially) despite of the on-going social divide between the rich and the poor. They continue to expand large domestic tech platforms (given global players like Facebook, Google are not allowed there) like Ant financial, WeChat, Tencents, Baidu etc. WeChat is a great mobile platform which does all user needs inside a single app, including, e commerce, money transfer, booking a cab, etc.

Blockchain continues to dominate as the latest and potentially the greatest technology with huge potential in re-organizing worlds social economic order. There are major developments across Blockhain open sources (like multichain, ehterium), Blockchain applications across all sectors including Financial Services, Healthcare, Identity management etc. We believe in the next couple of year, we would have embraced blockchain like we embraced Internet in 1998.

Technology merger with several traditional industries and service sectors is leading to great business opportunities. Rocket Science is not Rocket Science any more with Solar City changing the world by the most efficient rocket launches. They have made rocket engineering, cost efficient, more effective and will save billions of dollars for governments all over the world and make space travel more feasible by the next decade or so.

Tesla electric, and auto driving cars seem to be the next big products that will change the face of commuting dramatically. This disruption will impact the whole ecosystem,, including supply chain, car manufacturers, insurance, or driver less cars.

Section 1. Buy side

Foreign Investors continue to invest into India, amidst a fragmented and challenging global climate. India continues to outperform the other emerging BRIC countries which continue to struggle.

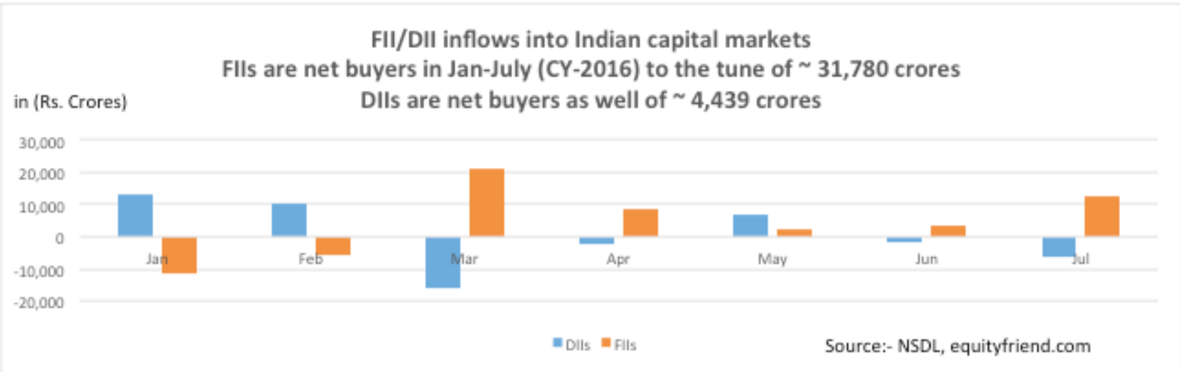
- China, despite signs of an imminent slowdown, continues to show momentum due to Government policy support.
- Brazil is facing deep recession, with its economy contracting around 8% in 2015/2016 (they even had to cancel the biggest festival on the planet,- the Rio Carnival in 2016)
- Russia is experiencing a soft downturn, but likely to improve going forward.

The other major global news included Brexit, leading to minor global additional volatility. There shall be higher negative impact on UK (possibly leading to recession), which is likely to impact Europe positively.

Domestic institutional investors (including mutual funds) saw higher AUM and hence increased flow into capital markets.

The Indian parliament passed the long awaited Indian GST reform, for single common tax across states. It has improved the domestic and international sentiment towards India.

The chart below shows increased net inflow into Indian capital markets by both Domestic as well as Foreign Institutional Investors.



Following are some of the news stories relevant to the Buy Side:

- Mutual Funds AUM has increased at a fast pace to Rs.15 trillion by the end of July 2016. Mint
- Mutual Funds were looking to invest in global markets, and failed to take off due to poor returns. Mint
- Mutual Funds are facing increased scrutiny by the regulator to keep the expense ratios transparent and low. Also, mutual funds may become costlier due to the GST implementation in 2017. The Times of India

Section 2. Sell side

Broking revenues continue to be stressed with lack of increase in market volume, retail flow, and some microstructure changes like increased in STT on options, etc.

The trend of Indian market trading volumes and trading opportunities:

- Seemed good in Jan - Feb this year
- Slowed between March-June due to not so impressive budget and challenging economic climate domestically and internationally
- Picked up again in July due to good monsoon in India, as well as passing of the GST bill

Retail volumes picked up dramatically between June and July and the investors are typically long on mid cap stocks, which are trading at an all-time high.

In other major news,

- Retail brokers start offering algos to retail clients, in order to increase volumes and create trading opportunities. Business Standard
- Stocks brokers stocks rallied this year, lead by diversified businesses, as well as better monsoon, GST, etc. leading to better market conditions. The Economic Times
- Cost effective discount broking model continues the get investors' attention. Full service brokers have also launched a differently branded discount broking arm to compete in the space. DNA India
- Various Global Institutional Brokers (including Societe General, Standard Chartered, Barclay's) have reduced India operations by either shutting down their institutional brokerage arms or research divisions. Primary driving factors are attributed to global strategic decisions by the banks, high domestic compliance and lack of ample revenue opportunities. This created better space for domestic players to increase market share.
- Given the performance of active fund managers has been sub-standard, various institutional investments are also going into cost efficient index funds.

Section 3. Exchanges

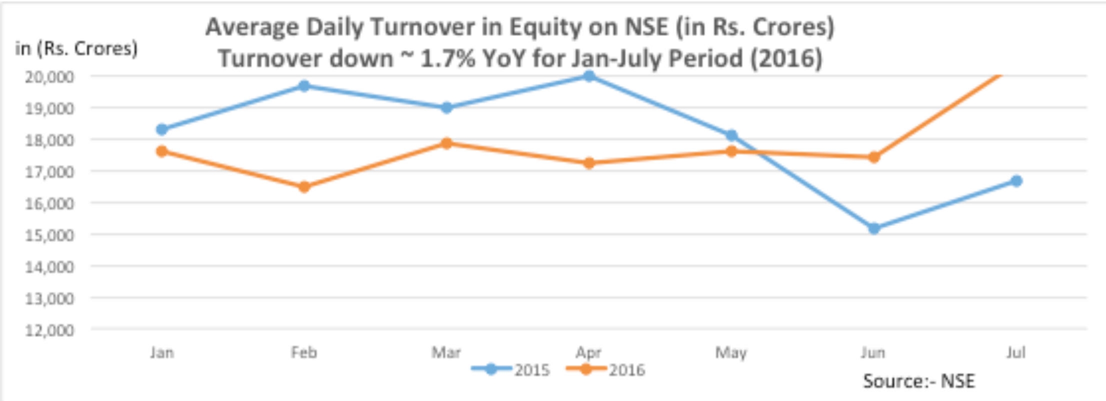
Volumes on Indian exchanges stayed low in the early part of the year, and picked up in July as financial markets picked up.

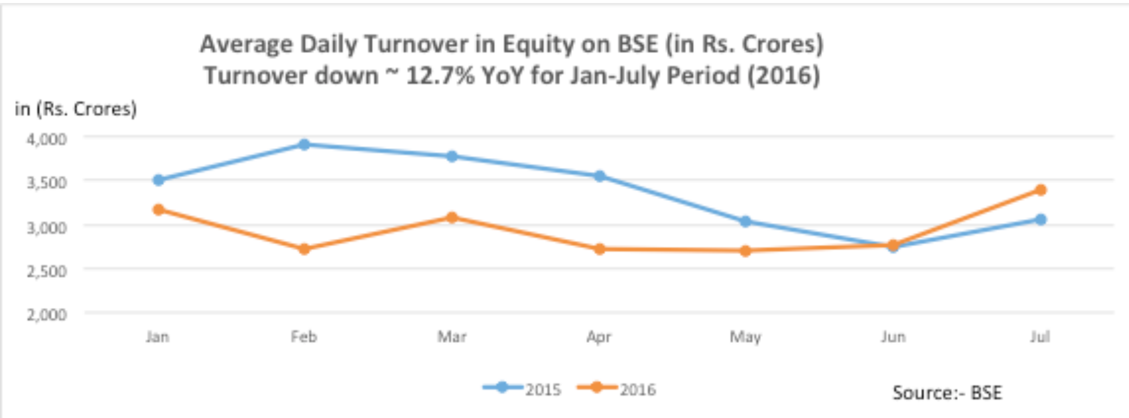
- Options volumes from June were impacted due to application of STT on options. Mint

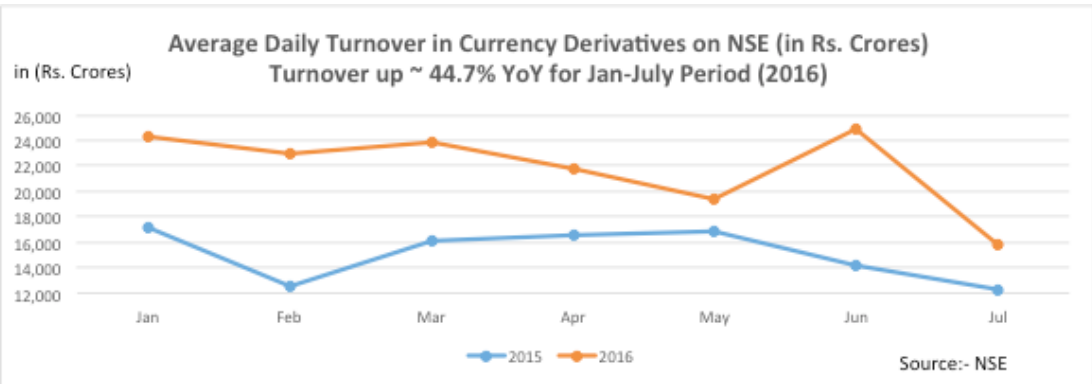
- Currency derivatives volumes slowed in June and July

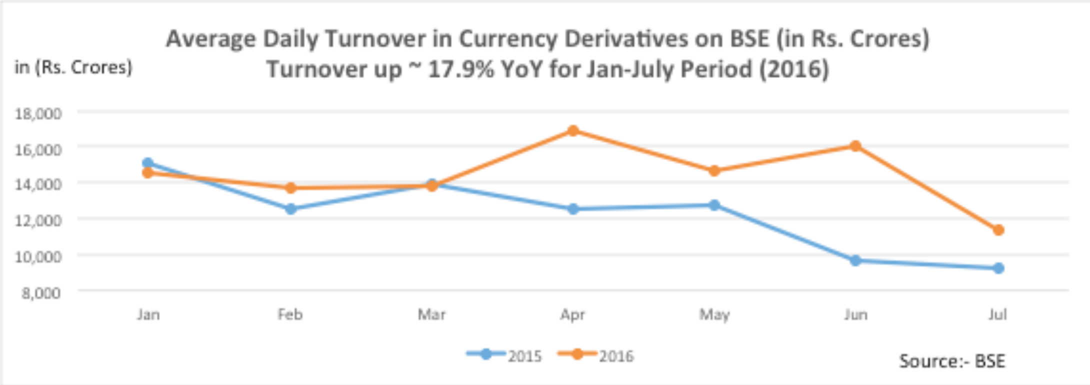
- Commodities volumes picked up on MCX this year compared to the year before

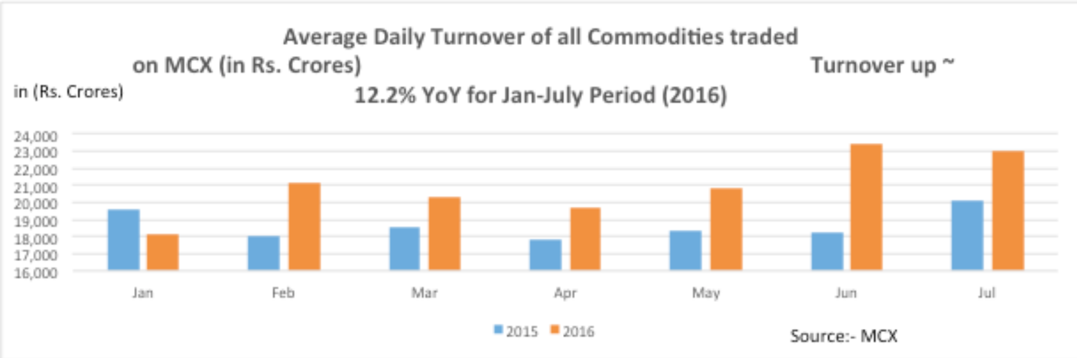
The monthly exchange-wise volumes compared to the year before are depicted below:











NSE launched weekly options (for BankNifty) that seem to help smaller investors and traders. If their trading horizon is a week, they will now need to pay weekly premium (which is around 1/4th of the typical monthly expiry premium). The Economic Times

SEBI has increased foreign institutions investment limit into Indian exchanges to 15% (from 5% previously). The Economic Times

NSE and BSE plan for IPO

Business Standard (NSE IPO)

Business Standard (BSE IPO)

Section 4. Regulatory Developments

It will be fair to say that India has suffered a big loss with RBI Governor Raghuram Rajan (the most respected central banker in the world) deciding to step down after September 2016 and not availing a second term in office. Governor Rajan's great work in last few years shall act as a strong foundation for Indian markets for the rest of this decade.

RBI tried to encourage innovations including,

- Peer-to-Peer Lending (RBI P2P consultation paper)
  - While there is a lending gap in the fragmented Indian market, we believe that P2P platforms won't take off for a long time in India, as a sustainable business model is yet to emerge.
- RBI believes in the potential of Blockchain, the core technology behind Bitcoin. (The Times of India - RBI Blockchain News)
- Payment Banks - Aimed at serving the unbanked which unfortunately have failed to take off in India. (Business Standard - Payment Banks)

The future of these innovations maybe in jeopardy after RBI Governor steps down.

SEBI continued to do good work under the guidance of UK Sinha who got an extended term till 2017. SEBI has been building stronger policy framework around several financial markets advancements including, fairness in Algo trading, transparency around Mutual Funds, clamping down on Chit funds, creating stronger structure of corporate governance across listed companies, deepening capitalization of exchange clearing platforms etc.

One notable recent development includes the SEBI discussion paper around algo trading

The proposed measures are high level, and the detailing shall make them more concrete and enable detailed analysis.

Here is our take on these suggested measures,

5.1 **Minimum Resting Time for Orders**

It's a basic need for any active trader (manual or algo driven flow) to respond to fast moving markets by modifying or cancelling an order as soon as possible. Taking this facility away shall deter the trading behaviour and reduce certain kinds of trading, including but not limited to market making. It may also lead to sub-optimal trade executions for institutional traders and would most likely lead to lesser liquidity and wider spreads.

Minimum resting period shall also make it harder for any new exchange in the future to be able to build liquidity. A research report of the Government Office for Science in the UK tried to prove this point, (UK research on minimum resting period discouraging market makers). This may lead to monopolies across incumbent exchanges, which is not healthy for the market. It will not help the end investor by any means.

Also, lets take an example with a resting period of 500ms. A trader in Mumbai can send orders and receive executions from Singapore Exchange (for instance) more than 7 times (average round trip execution between Mumbai and Singapore is 70ms – 100ms). Hence, in this time frame, when a trader can modify his order on the Indian exchange, the price can move on Singapore exchange more than 7 times (for Mumbai traders) and possibly 100s of times (for international traders closer to Singapore). This will take away trading opportunities from Indian markets and traders. If more liquidity shifts to Singapore, FIIs (foreign institutional investors) are less likely to come to India for trading, leading to even more liquidity shifting away.

As noted in the SEBI paper, the ASIC did not go ahead with this implementation, as it did not seem to solve any issue materially.

We operate in a globally competitive world. Indian exchanges have built great infrastructure to compete with global exchanges for global products. Regulators and exchanges have built comprehensive risk frameworks around these markets. Slowing them down shall be making India less competitive despite having great available technologies.

5.2 **Frequent Batch Auctions**

Auctions lead to uncertainty in continuous price discovery and order execution prices, which are needed in today's fast moving markets. Batch auctions work better in less liquid products. For highly liquid products, batch auctions are not an efficient trading mechanism and have not been adopted anywhere else.

The other proven solution to avoid continuous price discovery is use of dark pools. They efficiently manage transfer of larger institutional orders without price information leakage. They are however not allowed in India yet, and maybe a topic for another debate in the future.

5.3 **Random Speed Bumps or delays in order processing / matching**

This measure was first considered by the European market regulator under MiFID (Markets in Financial Instruments Directive) but then eventually not implemented, as it did not seem to solve the real problem of fair access. It is tantamount to having a speed bump on a high way where you slow down to cross the speed bump, and then speed up again without really enhancing the needed safety measure.

5.4 **Randomization of Orders received during a period (say 1-2 seconds)**

Randomization of order matching has been introduced in 2 FX markets- Reuters EBS and ParFX in 2014. The markets have not necessarily appreciated it. It works for some banks and institutional traders to cross their flow, as is the intention of this platform in the first place.

This is less likely to work for large liquid high volume market with several types of investors and traders. Randomization is also likely to lead to uncertainty and possibly high volatility.

Take an example, if a trader in London wants to trade Nifty futures, he may get it in 1-2 seconds randomly at some point at NSE, or he can get done within 100 milliseconds ($1/10^{th}$ of a second) on Singapore Exchange. The uncertainty and delay may reduce market makers, foreign investors, in the Indian markets, and hence reduce liquidity.

5.5 **Maximum order message to trade ratio requirement**

This measure helps weed out unwanted orders (assuming it's implemented correctly and penalizes especially out of range priced orders, rather than including around markets bid offers prices). This is already implemented to an extent by NSE and seems like an acceptable and useful measure.

There is an interesting paper on Oslo Stock Exchange around this topic (Oslo Order Trade ratio paper), which seems worthwhile to consider.

5.6 **Separate queues for co-lo orders and non co-lo orders (2 queues)**

It depends on how this is to be implemented. At a high level, it's likely to fragment market access, and very likely create unintentional arbitrage opportunity. For example, an algo may operate across 2 servers, one being in NSE co lo, second one being in Tata BKC data centre in NSE proximity, and plan to achieve the similar trading execution as was originally intended.

This fragmentation may lead to two markets being operated within a single exchange. This will lead to higher spreads for the non co-lo orders, which will have a detrimental effect on the investors whom SEBI is trying to protect. To circumvent this, the brokers may start routing even the retail orders to co-lo and this will lead to further depletion of liquidity in the "non co-lo market", having adverse impact on the investors.

5.7 **Review of Tick by Tick data feed**

This idea needs further detailing but the key point is that information should be available to all participants. More information may cost more.

Tick By Tick (TBT) data feed offers all orders, trades, modifications, etc, which is useful for some algos. In snapshot, some of this information is lost.

Even if the exchange offers 5 levels snapshot feed, or 50 level snapshot feed, firstly a retail / manual trader will not benefit from deeper order depth as he mostly trades on the top of order book price only. Secondly, the cost of more information is likely to be higher; hence a retail investor may not subscribe to deeper order depth in the first place. That leaves us back to square one, i.e. the current model of TBT for algo traders and Snapshot feed for retail traders.

Additional Insights:

1. **Algo trading / HFT has led to deeper liquid markets**, with tighter spreads. Indian markets are already able to support most number of orders compared to other exchanges in the world, and have been relatively stable (barring a couple of incidents) in the last 5 years, since the introduction of co-lo and algos. The existing risk management framework for Indian security exchanges which include a mandatory algorithm approval process and over thirteen risk checks for all algo orders are very comprehensive.

Any major change in the system may lead to lesser liquidity and wider spreads, thereby affected the efficiency of order execution for both retail and institutional investors.

2. **Slowing down may render Indian Markets Globally less competitive in the eyes of FIIs,** who can trade Nifty / Sensex on foreign exchanges like SGX, DGCX etc. Any major slowdown in trading may lead to Indian markets losing out on the shift in FIIs trading volume outside India.

3. **There is no precedence for most changes being considered**. These suggested measures have not proven whether they have lead to actual improvement in market safety, without reducing liquidity. Hence it's better to consider incremental changes rather than any major reforms.

4. **Fair access to markets** Cost of algo / co lo access can be brought down. One solution is the model of sharing co-lo rack, servers across members in order to make algos, co-lo, TBT more accessible to wider market participants. This idea has been analyzed by NSE and already implemented by BSE.

5. **Need investment into educating retail traders on how to use algos** In our experience, most Tier 2/3 towns based retail traders lack sound understanding of algos and their usage. Making market wide changes may not solve the lack of their algo trading knowledge that needs to be funded separately. Indian exchanges are already trying to do this currently.

6.**Best execution policies across the market may be debated for the future** and are likely to be constructive for the markets in the long term.

a. Europe has enforced best execution by allowing brokers to define these policies themselves, and then implement them. The objective is to make sure they give their investors (retail, institutional etc.) the most efficient order execution prices.

b. US has implemented RegNMS which gets exchanges to execute any trade at the best price available in the market. So, if Nasdaq gets a client order, and the best prevailing price is at NYSE, Nasdaq perforce has to route the order to NYSE.

7. **SEBI, Exchanges may consider moving to real time surveillance** (instead of T+1 surveillance) and try to capture any potential manipulations which may be possible pre-trade (for example at orders, cancellation level, which do not make it to trade, and hence possibly not as well examined in T+1 surveillance reports)

Conclusion

- <u>Order to trade ratio debate is relevant and is already being implemented</u> by the Indian Exchange(s).

<u>- Cost of colo access could be brought down by sharing of colo racks</u>, through empanelled vendors, as is being done by BSE, and planned by NSE

Section 6. Technology in India

The focus of algo traders has shifted from need for speed to smarter algo logic. Several quantitative, technical indicator based algo developers seem to consistently do well. Focus on FPGA based trading has reduced as software offers benefits of cost effectiveness similar to FPGA performance.

Several exchange members continue to white label their retail front ends, mobile app based trading continues to be the focus, self register sign-ons and training focussed simulated trading is also being widely offered now.

Key Indian trading technology providers include Thomson Reuters' Omnesys, Financial Technologies, Greeksoft and Symphony Fintech. For charts based trading, Spider and Falcon seem to lead the way. Other vendors like Modulus, Protrader, etc. are trying to expand in Indian markets for retail platforms. Global software like Flextrade, Fidessa, Ullink are also used by some institutions in India.

uTrade competes as well as collaborates with several vendors listed here.

Section 7. Worldwide themes

US

US markets saw the continued liquidity fragmentation across 10+ exchanges, 10+ dark pools, and several alternate trading venues. Both trading opportunities and volatility reduced during the year, compared to the year before.

London Stock Exchange and Deutsche Boerse have agreed to merge their exchanges, creating a large European exchange.

Regulatory package Mifid II is slated for implementation in January 2018 Link

US exchange BATS has led the charge against brokers to weed out global manual traders who indulged in malpractices such as spoofing on the exchange. Bloomberg BATS news

Relevance of HFT continued to be a political debate in the US with Hillary Clinton also jumping the gun against it. (Source: Bloomberg)

Brexit (UK exiting EU) shall have deep repercussions for UK and European financial markets.

Section 8. Global Fintech

Fintech continues to trend and traditional players in the financial services space seem to be accepting the challenge. They are trying to participate in the fintech growth to possibly pivot or benefit from the impending disruption somehow.

London after Brexit is being challenged by Berlin, Paris and various European centres leading to fragmentation of Fintech firms away from London.

Bitcoin related implementations faced some challenges after Etherium DAO's poor implementation lead to $53m loss. This can be attributed to a poor implementation of the code, and there was nothing fundamentally wrong with the underlying Blockchain technology. Forbes news

In another hack, **~$65m was lost from Bitfinex wallets**, again possibly due to poor implementation of the wallet system. IBTimes News

Blockchain technology and its use cases are being explored by 100s of firms around the world.

Disruptions brought about by Fintech companies have the potential to upstage incumbents and reshape markets faster than any force in the industry. But there is no Google or Facebook sized mammoth in the Fintech space yet.

Section 9. What are we reading?

Here is a selection of our favourite articles and content from 2016.

- A very creative and interactive "gamified" version of resume Interactive-resume
- Potential Impact of Blockchain don tapscott on blockchain
- Indian start-ups need a wake up call Link
- How could banking move to blockchain Link
- Bitcoin miners effort will rewarded in half link
- Rexit – Who is responsible for Raghuram Rajan exit Link
- Science discovery – plants to communicate back link
- Indian Income Tax officials scale up. To send 7 lac notices Linkh
- Drones to deliver medicines in Africa? Link
- Panama Leaks lead to the first casualty Link
- Google parent company Alphabet to build smart cities. We expect them to be really smart Link
- Do we believe the GDP growth no.s coming out of India? Link
- Are we living in a video game? Link
- Why Russia matters Link
- Ease of doing business in India. Unfair government involvement in a simple corporate case between Tata and Docomo. Link
- Worlds biggest pension fund loses $51bn Link
- Fintech unicorns in the world by valuation Link

Section 10. Updates: uTrade Solutions

Some of the Product Developments at uTrade Solutions in 2016:

- Several uTrade clients have launched white labelled platforms built on uTrade retail software
- uTrade is a default trading terminal for exchanges including GMEX (UK), Ceed (Chicago), Case (Dushanbe), ALT X (Uganda), HNX* (Vietnam)

- muTrade has added Russia and Turkey for low latency algo trading
- muTrade has been certified with SGX upgrade Titan platform which is to be launched later this year
- muTrade has included span margining along with its algo platform
- muTrade has added ladder, charting, look up tree, and various advanced UI features

- uTrade has launched Blockchain products, namely uClear and KYChain

uTrade News, Blogs and Events (selected few)

- Blockchain sets its sights on the OTC market Treasury Today UK

- uTrade ships blockchain clearing platform to GMEX, UK Finextra

- Demistifying blockchain Businessworld

- uTrade brings bitcoin tech to market | The Hindu Business Line

More available at http://www.utradesolutions.com/newsroom.html

- How to identify and avoid a Kodak failure moment Blog

- Thoughts behind uTrade rebranding Blog

- Future of Bitcoin Blog

uTrade team is speaking at the following upcoming events

- 26th August in Mumbai, Mahindra Group CFO Conference

- 1st September in Mumbai India FIX conference

- 13th September in Hong Kong Euromoney seminar on capital markets / blockchain

uTrade updates and news, from the 2015 Archive

Major product developments at uTrade Solutions in 2015:

- uTrade launched Listed Markets, in addition to Forex and CFDs trading software in Chile.
- uTrade integrated with Activ, eSignals, CQG, TT FIX, etc. for market data. Easyscreen, TT FIX, Bloomberg FIX for global orders and executions were also successfully integrated.
- uTrade launched its native mobile, html5 and desktop apps for trading and admin/risk management.
- uTrade added chart based trading into its software and improved its UI dramatically.

- muTrade added SGX and DGCX for low latency algo trading.
- muTrade optimized its latencies to single digit microseconds from tick to order.
- muTrade also launched DMA FIX API
- muTrade also has an Algos API for customizing client algos
- muTrade comes integrated with a secondary risk management system.
- muTrade added a variety of inbuilt arbitrage, market making and execution algorithms on its platform.

uTrade in the News

- Rising Stars |Bloomberg TV India
- Algo Trading – Setting the Record Straight | Moneycontrol
- Why participants in the Indian financial market need to adopt secondary risk management systems | Business Insider India
- Why open source is a game changer for financial services industry | ERP Insights
- Why Algo trading must not be blamed for market crashes | Data Quest

Section 11. uTrade Solutions - Company Overview

uTrade Solutions is a fintech company providing enterprise solutions including multi-asset trading platform, algorithmic trading engine, risk management solutions, and Blockchain Solutions to financial institutions and their end customers. Our product suite includes the following:

- ✓ **Multi Asset Trading platform:** with full suite application and html5 web-based front ends (Including admin functions, risk management, order management, connectivity to exchanges etc.). It supports trading for all listed products including equities, futures, options, commodities, as well as for non-listed products like FX, CFDs, etc.
- ✓ **Low latency algorithmic trading platform:** Used in exchange co-location environment or in client data centres/cloud for fastest access to markets to execute arbitrage, market making, execution, excel based, quant driven, api based proprietary and various other strategies across all asset classes. It also provide FIX APIs for DMA and Algos access
- ✓ **Open Source, Risk Management, and Custom Solutions**: We also customise and open source some modules of our technologies.
- ✓ **Blockchain Solutions:** uTrade is driving new solutions enabled by the latest technologies including Blockchain. We have built Clearing and KYC focused Blockchain platforms. We are also partnering with clients to guide and provide Blockchain Solutions for their desired workflows.

We have built our products from ground-up with a modular architecture in order to effectively address current and rapidly evolving user needs. We have also filed for 6 patents in India and 1 patent in US/UK to lead innovation in the trading life cycle.

Please watch our video demos at www.youtube.com/utradesolutions

In 2013-2014, uTrade Solutions was recognized as a leading innovative fin-tech start-up by:

FinTech Innovation Lab | RED HERRING WINNER 100 ASIA | NASSCOM® | CII Confederation of Indian Industry

Section 12. uTrade's Global Footprint (client presence)

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