Software in Financial Markets

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Financial Markets? A geek’s guide...

- **Products**
- **Participants**
  - Investors
  - Speculators
  - Arbitrageurs
  - Market makers
- “Liquidity”
IMC? Who are these guys?
BBC Documentary: “Traders: Millions by the Minute”, Sep 2014
HFT: Finance or Technology?

• (B)leading-edge technology
  - Latency
  - Scalability

• Supercompetitive

• Technology decisions are business decisions
Supercompetitive: Speed is critical
Speed has 2 axes

• Innovation time
  - Fast feedback is *critical*
  - Iterate everything
  - Manage risk

• Performance
  - Level playing field: Reaction time (=latency) counts
  - Iterate everything
Speed
Speed & IMC

- Arbitrage
  - E.g. Nikkei between Osaka stock exchange and Singapore stock exchange

- Protection
  - E.g. management of hundreds active orders on the exchange?

- No one like to use a sluggish system
  - E.g. Buying a super computer to run excel.
The Design

• Modularisation and abstractions.

• Design trade-offs
  E.g.
  - The algorithms & data structure
  - Time complexity
  - How does it scale?
    • With users & with data.
The Measurements

- Tooling:
  - Off the shelf vs build your own
  - Accuracy & granularity of the tool.

- Methodology:
  - E.g. simplistic approach – loop 10, 1000, 10000 ...

- Targeted Measurements:
  - E.g. hot path(s) vs Once off.
The Speed “Secret Sauce”

Feature(s) that gives your API a speed edge over the other teams

E.g.

- Awesome data structure
- Smart Caching
- Parallelisation
- ???
In Summary...

Three equally weighted sections:
- The Design
- The Measurements
- The Speed “Secret Sauce”

Three teams invited to the IMC office to do a 5-10 minutes presentations
- Guarantee prize money & chance to mingle with IMC engineers
Questions?