GAZPROM GERMANIA

Near Silent Trading

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Abstract

Trading has evolved from a noisy chaotic environment to the near silent running of algorithms. In a fast paced environment where making money is the primary objective where does a developer fit?

About me…

Name: Chris Ryder

Team: Digital Trading

Role: Development Team Lead

Company: Gazprom Marketing & Trading (GM&T)

Prior to GM&T: Energy Trading, Civil Aviation, Marketing, Environmental Consultancy

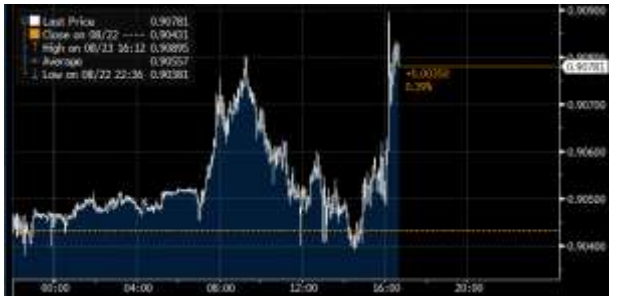
Agenda

- Trading 101
- Decision Making
- A Developers Approach
- Evaluating Strategy Ideas
- Trading Strategy Lifecycle
- Pipelines
- Operational concerns
- Deployment Philosophy

Trading 101

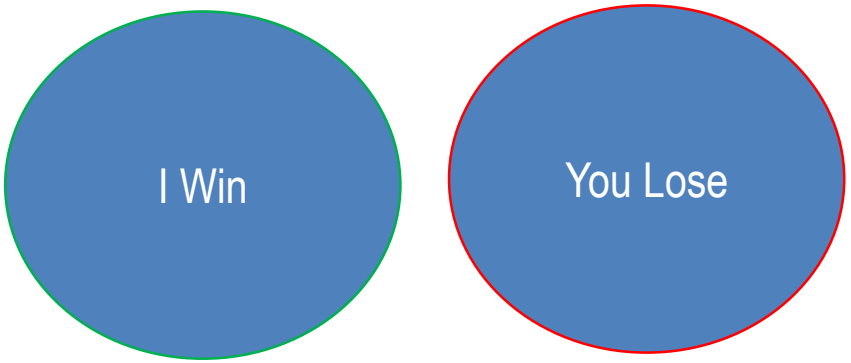
Trading is:

- Buying & selling
- Decision making
- Trading signals
- Taking a position in the market
- Accepting risk
- Making & losing money



Trading 101

Day trading is a zero-sum game…*



* What defines winning and losing is dependent on a background agenda which is specific to the scenario and may not be visible to all parties. In some scenarios both parties may consider themselves to be winners as they have both successfully achieved their end goals.

Trading 101

Good Decisions:

- Make money £££££
- Positive Profit & Loss Impact

Bad Decisions:

- Lose Money £££££
- Negative Profit & Lose Impact

Decision Making

If you can make more good decisions then you can make more money

Increasing Decisions: Option 1

Increase Capacity Utilization

- Ask existing traders to trade more frequently

Outcomes:

- Lower quality decisions
- Lose money more frequently
- Burn out

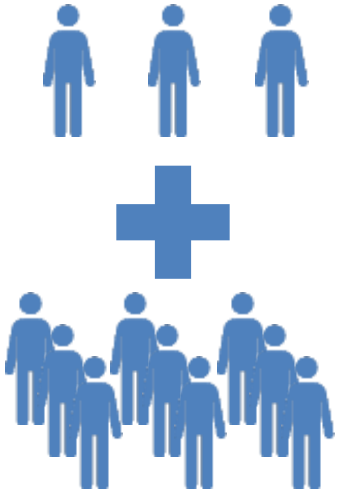
Increasing Decisions: Option 2

Scale Out

- Hire more traders

Outcomes:

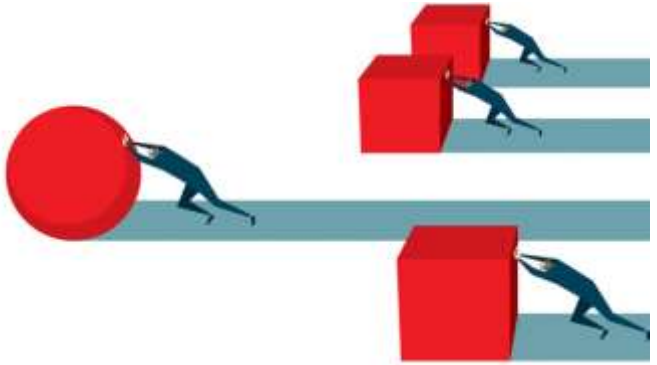
- Linear Growth
- Unchanged decision making process



Competitive Advantage

Do we gain a competitive advantage by:

- Option 1: Increasing Utilization
- Option 2: Scale Out



No

- We're not doing anything differently
- We have the same % return

The BIG Question

Can we make timely good decisions more frequently and trade off the back of them?

Is there a 3rd option?

What does it take to make a good decision?

To answer that question lets look at the different decision types

Decisions: Types

Types of decision:

- Simple decisions
- Complex decisions

How do you know there is a decision to be made?

To support a decision we look for signals

Simple Decisions: few/simple signals

Complex decisions: many/complex signals

The Decision Making Process:

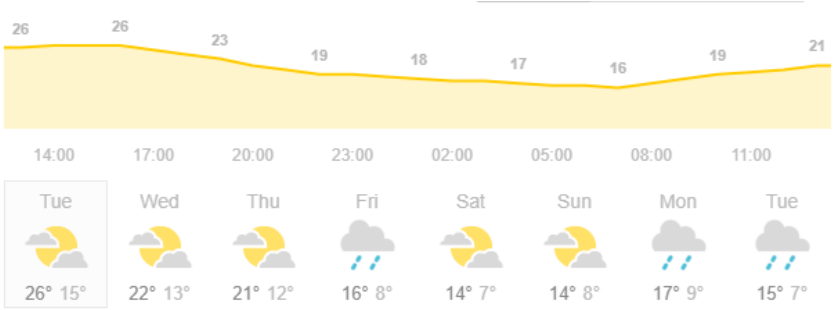
Step 1: Identify the decision
Step 2: Gather relevant information
Step 3: Weigh the evidence
Step 4: Take action

Trade Signals – TO DO

What is a Trade Signal?

"A trade signal is a trigger for action, either to buy or sell a security or other asset, generated by analysis. That analysis can be human generated using technical indicators, or it can be generated using mathematical algorithms based on market action, possibly in combination with other market factors such as economic indicators."

https://www.investopedia.com/terms/t/trade-signal.asp



Decisions: Timeliness

Trading opportunities exist for a finite amount of time

- when they pass, the opportunity to make money passes

(sorry to disappoint - time travel hasn't been invented, we can't rewind time….)

Requirements

- Consume data
- Analyse data
- Generate a signals
- Make decisions
- Continuous operation

Collaboration

Trading automation requires introducing 2 groups of people to each other:

- Traders - market & domain knowledge
- Developers - programming & technical expertise

Measuring Success

Neither group measures success in the same way:

- Traders – Profit & Loss*
- Developers – Stability & Correctness*

* Oversimplified

Automation for all?

There are many different flavours of trading

For example:

Discretionary/Speculative Trading

- Automation Suitability: Poor

Systematic Trading

- Automation Suitability: Good

If This Then That

Systematic Trading: Applies IFTTT to aid decision making using evidence-based domain knowledge

"If it's raining outside, then I will take an umbrella."

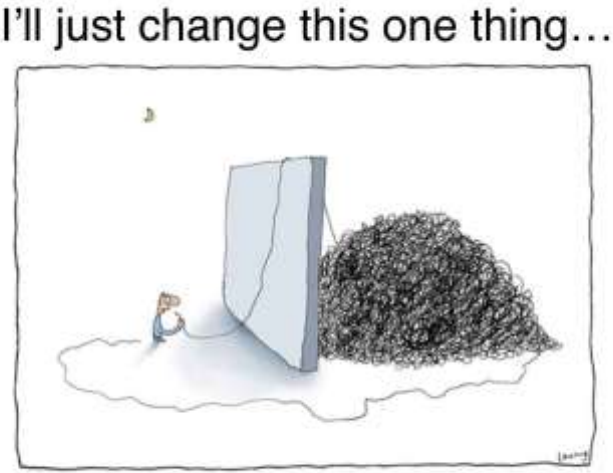
"If it gets unexpectedly cold, then the day ahead price of gas will go up"

IFTTT: Deep dive

"If it gets unexpectedly cold, then the day ahead price of gas will go up"

On the surface this conditional statement seems quite simple.

But is it simple?



IFTTT: Inner Questions

If it gets unexpectedly cold	then the day ahead price of gas will go up
Where will it get cold?	What is the within day price?
Is the cold spell localised or widespread?	What is the day ahead price curve?
What time of year is it? spring/summer/autumn/winter	How quickly do we expect the price to increase/fall?
What is meant by unexpectedly cold?	Has market already priced in to the cold weather forecast?
Are our predictions ahead/behind or different/same to our competitors?	Are we in a position to trade?
….	….

IFTTT: Balancing Effort & Reward

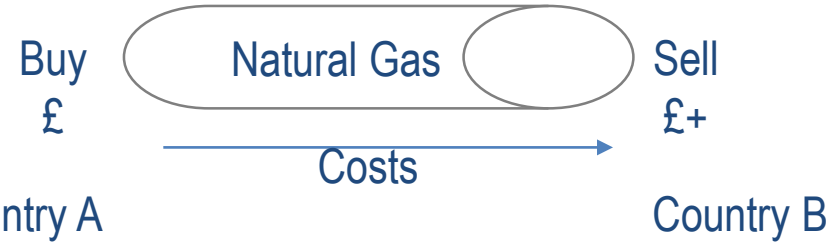
"If it gets unexpectedly cold, then the day ahead price of gas will go up"

This statement is **Complex**

Not every IFTTT statement is a good candidate for a trading strategy!

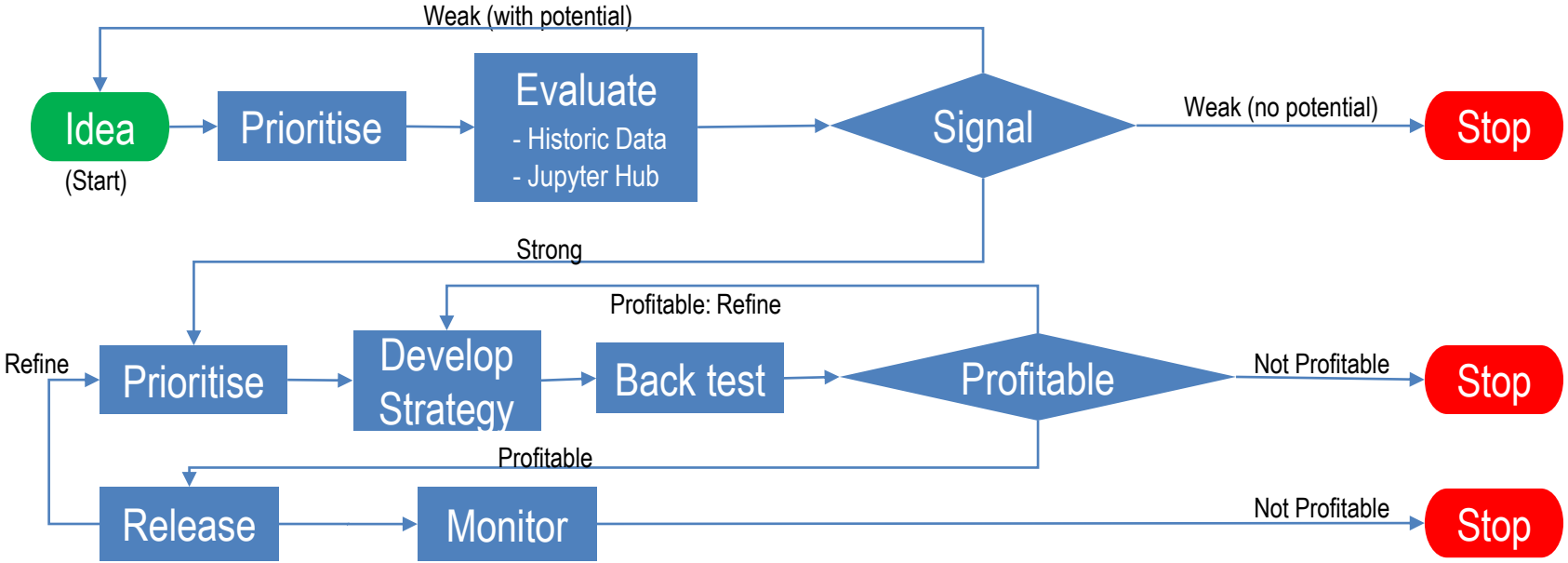
IFTTT: Realistic Example

"If it is economically viable, then we can trade gas around a pipeline"



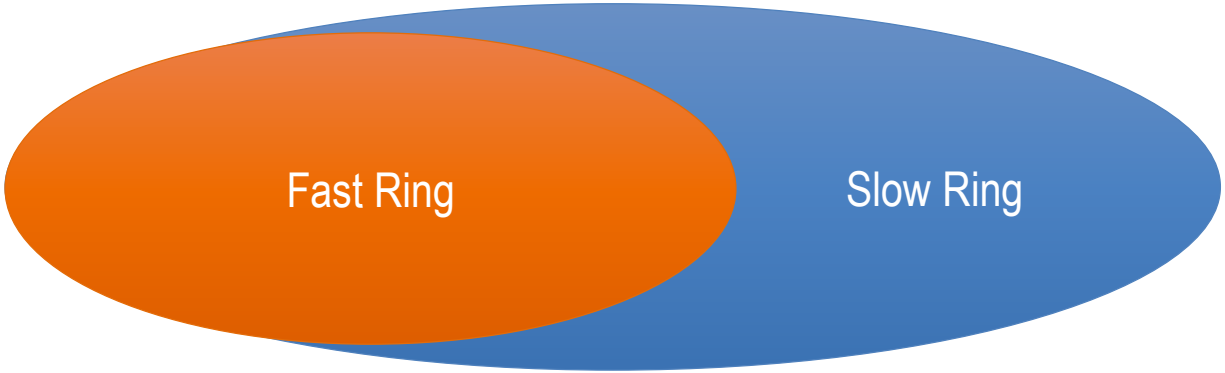
Trading Strategy Lifecycle

Primary Principle: Fail Fast

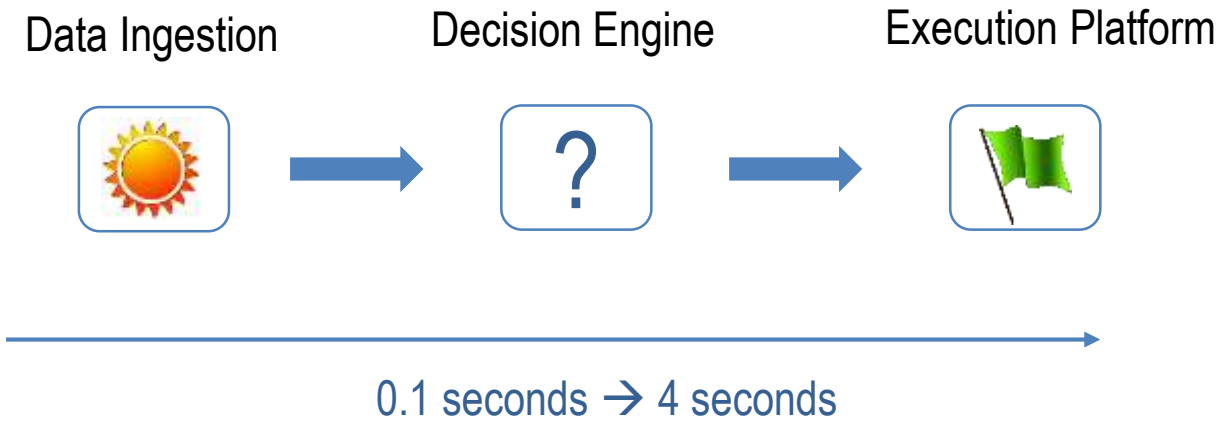


Ring Theory

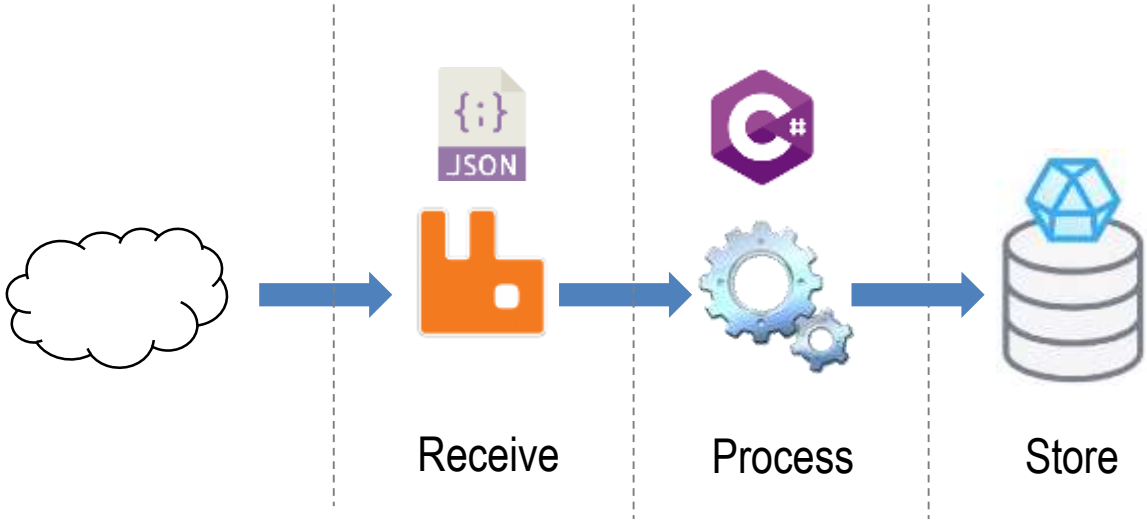
Supporting the fail fast principle



Timely Decision Platform



Data Pipeline *

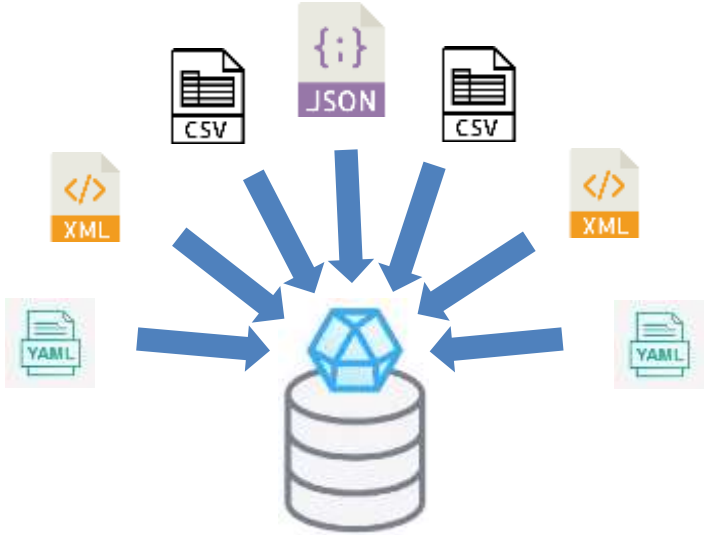


* Several architecturally different data pipelines coexist.
Non-functional requirements determine the architecture employed.

Data Inconsistency

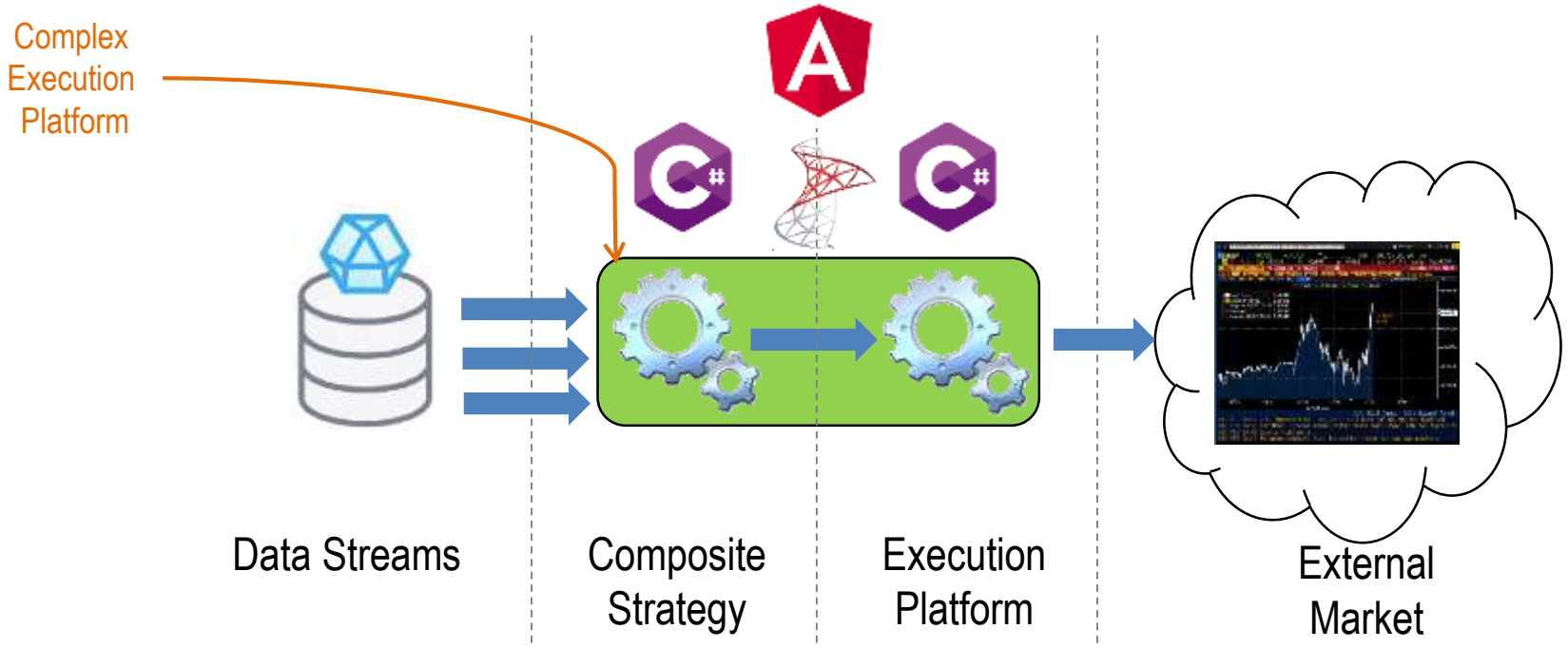
The data is always different:

- Price Data
- FX Data
- Flow Data
- Outage Data
- Weather Data
- Economic Data
- Calendar Data
- Sentiment Data



“Inconsistency is the only thing in which men are consistent.”
- Horatio Smith

Strategy Execution Pipeline



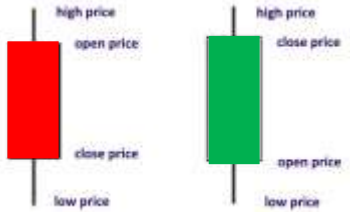
Trends

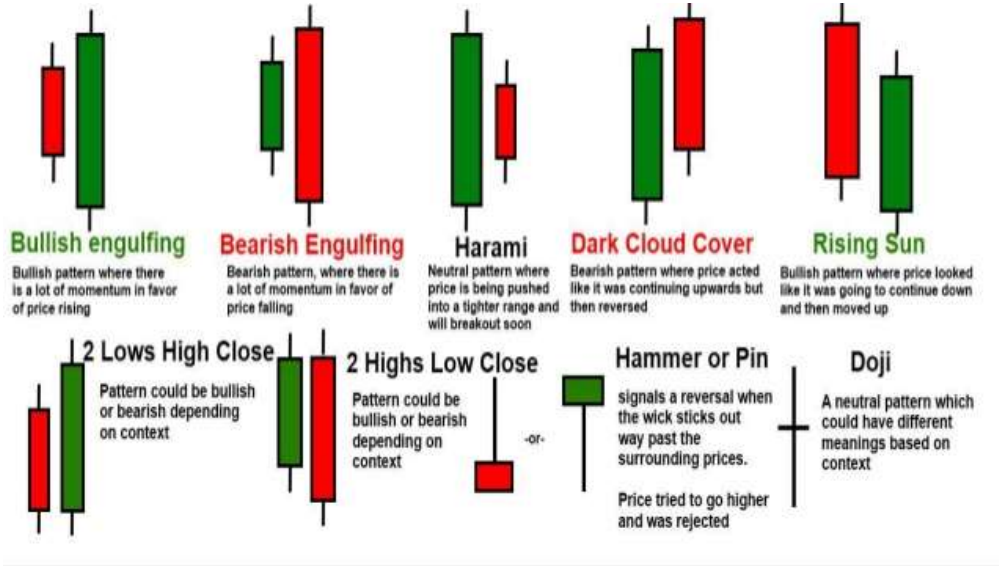
- Uptrend
- Downtrend
- Sideways Trend

Candlesticks

Trading screens and trading strategies all revolve around Candlesticks

- Open
- High
- Low
- Close





Doji's & Signals

The code below looks for an Inside Day Doji and generates a signal


```
bool buySignal;
bool sellSignal;

bool insideDay      = bar.High < yBar.High && bar.Low > yBar.Low;
double body         = (bar.Close - bar.Open);
double dojiLimit    = MetaInfo.Tick * 10 * dC.DojiLine;
bool doji           = body < dojiLimit && body > -dojiLimit;

buySignal = insideDay == true && doji == true;
sellSignal = insideDay == true && doji == true;
```

INSIDE DAY – the second candle is within the body of the first

Back Testing

Market Price

Profit & Loss

Market Activity

Operational Concerns

Markets are always moving

- Is data fresh?
- Are applications running as expected?

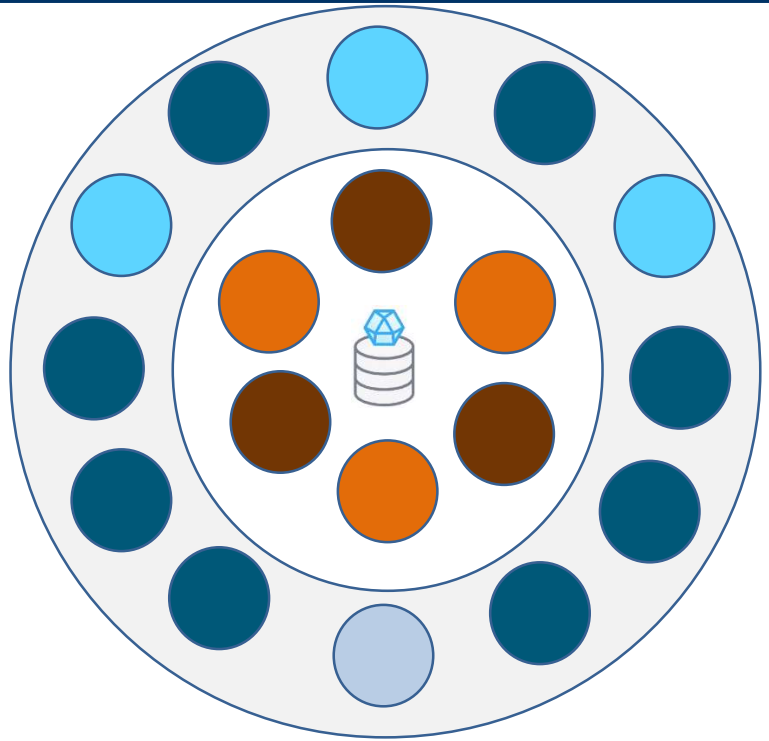
To reduce risk monitoring becomes critical

If get yesterdays data today then I can't make a decision on it.

Deployment Philosophy

Core Applications

- Alpha Strategy
- Trading Strategy



Satellite Applications

- Loaders
- Monitors
- APIs/UIs

Recap

Why “Near silent trading”?

- Silent running algorithms may be doing the trading

- Those algorithms are backed by many hours of collaboration and conversation by colleagues with a range of skillsets

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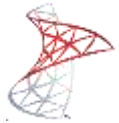
Recap - Tech














Questions…?

Thank you