Unraveling Artificial Intelligence to Gain Edge in a Turbulent Industry
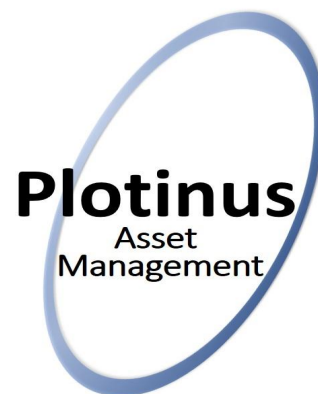
CJ Finnegan

CEO & Principal Plotinus Asset Management

UNION OF INVESTMENT COMPANIES
اتحـاد شركـات الاستثمـار

Plotinus
Asset Management

مركز دراسات الاستثمار
ISC
INVESTMENT STUDIES CENTER

Understanding of and Relevance of AI

- Do you already have AI investment?
- How would you define AI investment?
- What are you looking for?
- What are your concerns?
- Does the current turbulence make you wonder about using AI?
- Does AI Investing have specific regional relevance?

Likely Avenues for Indirect AI investment

- NASDAQ CTA Artificial Intelligence and Robotics Index or other such index
- What realistically differentiates the AI component or its benefits or drawbacks?
- Is there a difference between this and tech or communications investments?
- Only 7 Unique companies out of 30

Fears: An Educated Mob is an Angry Mob

- In an interconnected world there is more international awareness across global populations

- The unabated push to channel education has created a problem

- A more educated population is not the same as a hungry peasantry that historically could be distracted and fed and fooled

- Education is for many heading rapidly toward a dead-end

- AI as technology is helping cheapen knowledge – this knowledge was once prized and justified education

Social Investment, A Compliment to AI

- An unlikely contrast
- For Investors reading the path of AI evolution
- Look at its feared consequences
- Mass unemployment of the 'educated' white collar worker.
- Social Investment – is likely a very large growth area

AI in Asset Management

- Back Office Efficiency

- Fund Administration

- Speed

- Reduction of Costs

- Help to meet the transparency expectations of Investors

- Compliance

- Analysis

Dedicated AI Based Managers

- New field
- Currently too broadly defined, it includes 'traditional' Quants
- When 'traditional' Quants are removed are the managers really comparable just because they use AI?
- Field is sparsely populated
- How do Investors deal with short track records?
- What differentiates good technicians from good Managers?
- AIEQ probably the best capitalized Carrying the IBM Brand

A Glance at Quantitative Hedge Funds

- Long/Short Equities – Man AHL

- Managed Futures – Winton

- NLP, Sentiment – DE Shaw & Company

- Blending of technology into pre-established investment approaches

- Parallels with Technology/Communications Sector
    the major players are levering their experience and established edge

Legacy Investors

- Legacy investors with interests in established players such as:
  - Microsoft
  - IBM
  - NVDIA
  - Alphabet
  - Facebook
- They are themselves investors in and promoters of AI technology
- Fundamental Investment in AI companies is done more safely through investment in the large tech/communication companies
  - Eliminates the Structural Risks of early stage investments
  - Deprives investors of the opportunity gains of early investment

Back Office Inefficiencies

- Dull Repeatable

- Dull Expandable

- In Asset Management these tasks are particular present in:
  - Administration
  - Compliance
  - Analytics

Possible Relevance to Islamic Finance

- Creating more product offerings
- The creation of active enhancing strategies on passive Sharia complaint indices
- Speeding up the screening process for Sharia Compliance
- More rapid portfolio construction

Passive Investment

- The growth of passive investment has shocked many Active Managers
- Growth Fueled by:
  - Low Fees – they have driven its expansion
  - Fixed Income Returns Globally disappoint:
    - Lack of attractive safe returns makes more risky equities investment more attractive
  - Cheap money has to go somewhere
  - Failure of 'traditional' Active Management to deliver
  - Ease of monitoring

Too Big to Fail?

- More than 50% of US equities investment happening passively
- Huge Index Investment
- The US Index Investment is being treated as 9% p.a. "Savings Bank"
- The Fed must protect this "Bank" from failure
- Swift Action to offset the Q4 2018 fall
- Current Coronavirus saw aggressive US Federal Reserve action to protect the US equities market (The emergency intervention on March 3) with the promise of more to come

Passive Investment Issues

- Everyone is getting the same returns
- Where can you find alpha?
- Is there an alternative with similar characteristics?
- De-risking equity exposure
- Hand tying investment policies

Passive vs Active Transparency vs Opacity

- Institutions are under pressure to find Alternative Allocations
- In the search for Alpha, Active Managers have reduced opportunities
- Traditional Hedge Funds have disappointed
- There is a problem with Alternatives – there is frequently a return/illiquidity compromise which from a reporting point of view can be a return/opacity payoff.
- Attractive Private Equity and Venture Capital tend to be illiquid
- AI can offer an Alternative

AI – Two Approaches

AI Assisting the Process

- Represented by the 'traditional' quants
- If invested, you are already and absorbing these benefits

AI Decision Based Trading

- New
- A deeper exploitation of AI
- For Investors seeking new opportunities

The Morphing of Quants

- Renaissance Technologies
- DE Shaw & Company
- Bridgewater Associates
- Winton

- Quantitative Finance emerges from the same base as technology companies
- The late 1970s and early 1980s represented the watershed moment for quantitative finance
- It was the disrupter of Financial Norms
- Now it is a norm unto itself

Quants are Quants

- AI is necessarily being used by all the big houses
- These firms are defined by already established Investment Processes
- With large pre-existent relationships with Institutional Investors they must maintain their processes
- They are necessarily bound by their 'tradition' of investment
- They are not as able to exploit AI in new directions

Number Crunching vs "Thinking"

- The quantitative approach uses algorithmic decision making
- This is also true of AI systems
- Is there human intervention?
- Is the process a gradual honing of an original equation?
- Is the machine thinking?

Data Overfitting

- Complexity

- Pursuing correctness

- Ignorant Learning

- Daring to ask Why?

Problems of Model Complexity
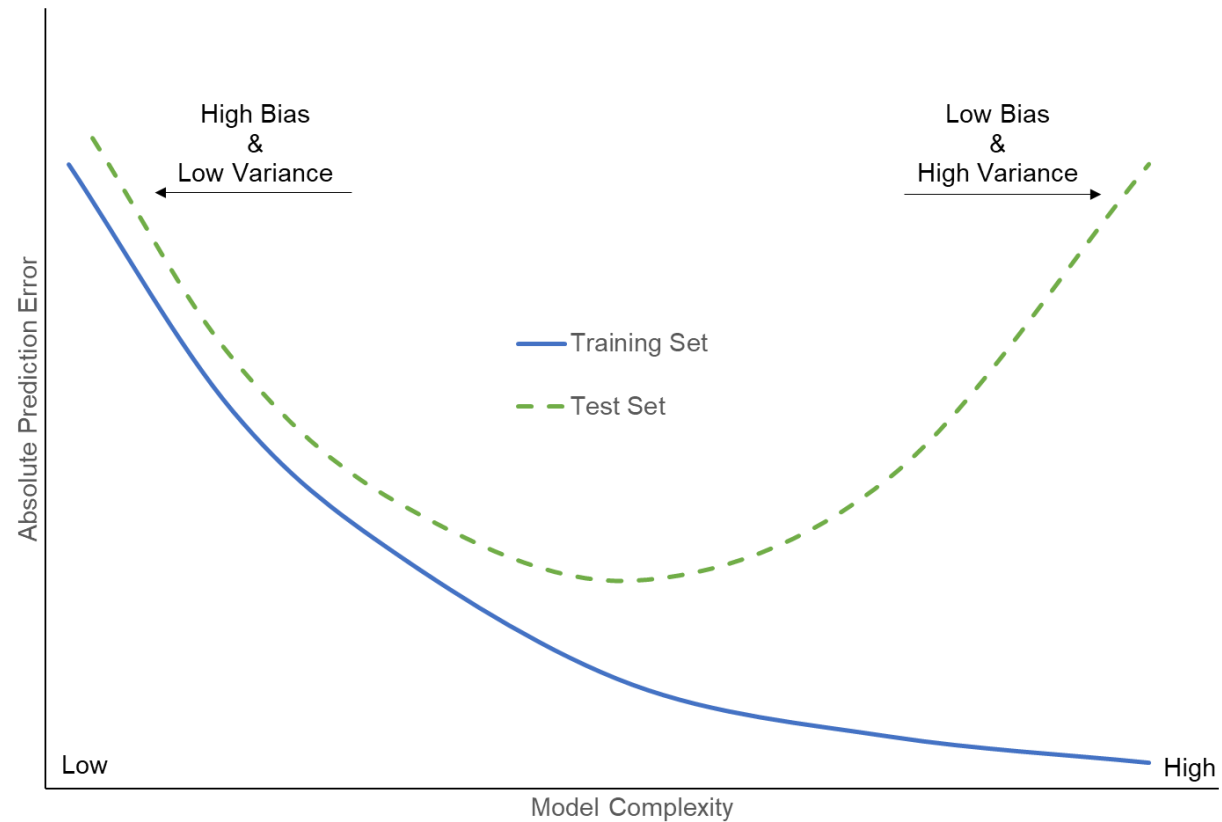
SOURCE: Plotinus Asset Management

Problems with Data *ad infinitum*

- Bigger does not necessarily mean better

- Strategy Drift

- Can an AI manager explain why the system is making its choices?

- What does not knowing, mean?

- Alternate data problems

Derived Data vs Big Data

- What is Derived Data?
- Differences in approach
- Each has its own rationale
- Finance Lends itself to Derived Data

Is AI Asset Management different from Robo Advisors?

- Portfolio construction is not the same as Asset Management
- AI Decision Based Trading involves timing the market
- Optimization should be treated with the highest skepticism
- Better to look for redundancy rather than optimization

AI and Fluctuating Portfolios

- What are the criteria for investment?

- Does imposing external criteria impede the AI making decisions?

- How do you keep check on this as an investor?

- Problems Benchmarking

Hybrid AI – The Future of AI in Finance?

- Data Scientist meets Trader

- The Art of data science?

- Discerning how to build machines

- Market Knowledge – is it protected from devaluation?

Merging Disciplines

- Sensing the Market
- Don't create a false dichotomy:

    Data Science vs Financial Market Practitioner
- Don't be fooled by Academia
- There is no singular version of AI

Broadening Thought and Approaches

- Narrow Definitions of Intelligence are unhelpful
- Replicating Human Behavior is not necessarily what you want
- Natural World and AI
- Task Based AI – highly applicable to finance
- There is no magic formula or self manifesting formula
- The market requires inequalities
- There is no such thing as an even playing field

Regional Financial AI Centers?

- A New Opportunity

- A Global Diffusion

- Small Niche Ecosystems

- Singapore High Levels of investing

AI Global Opportunity

AI Startups Private Investment per Capita 2018 ($/Person)
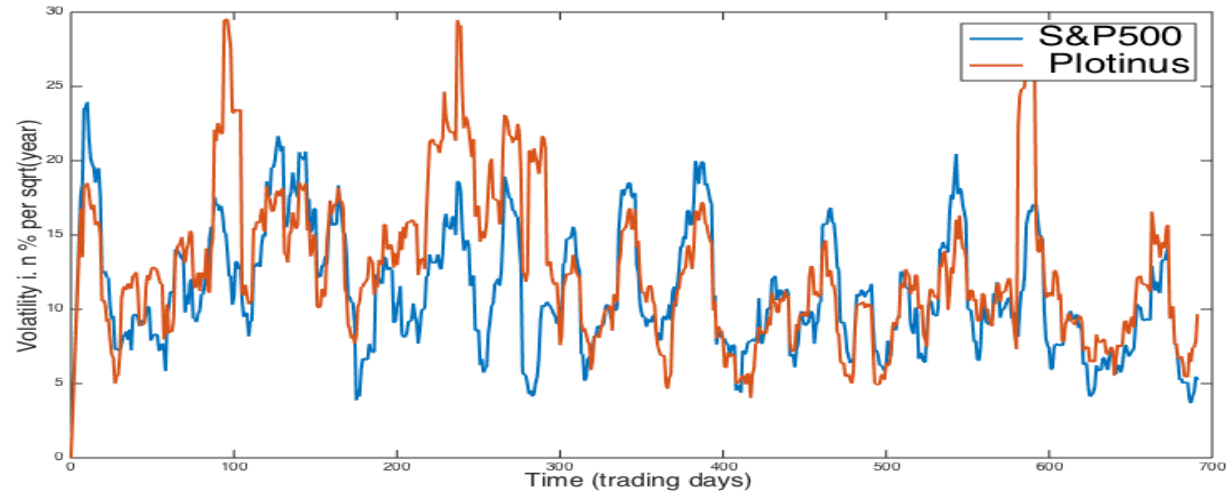
3   114
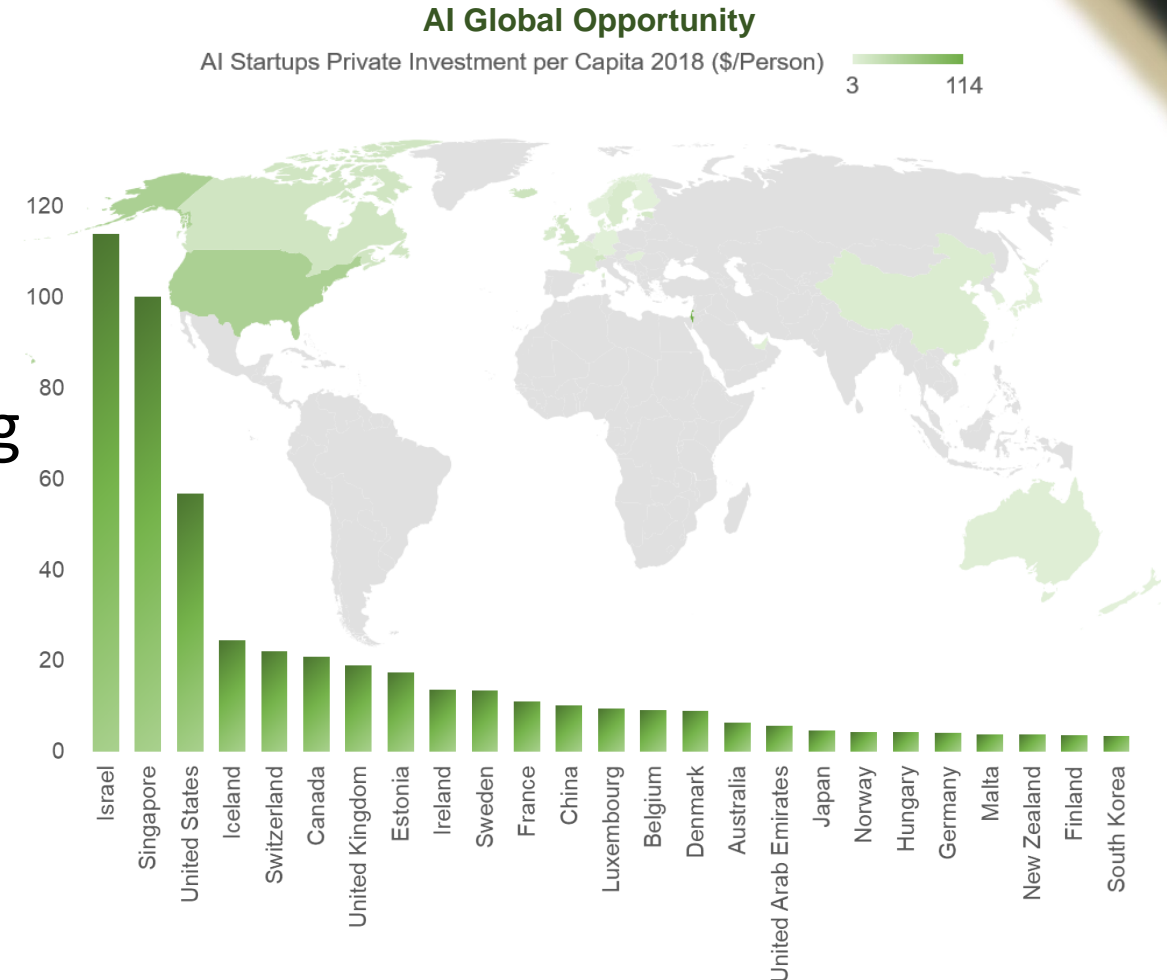
SOURCE: Chart: Plotinus Asset Management, Data: Stanford Artificial Intelligence Index Report 2019, CAPIQ, Crunchbase, Quid, 2019

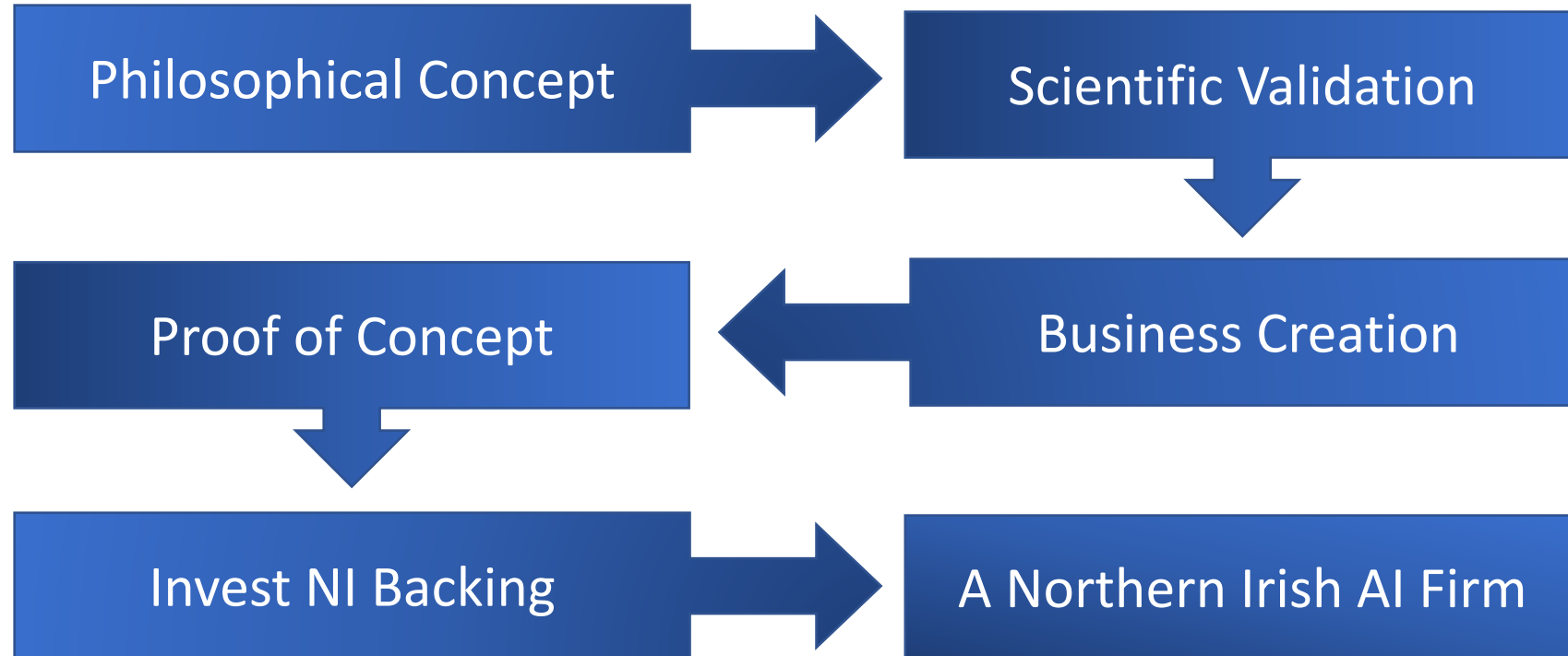# Plotinus Our Story

Informational Dissonance

An Illustration of Informational Dissonance

- Unique analytic process
- A New Metric

- Extracts additional tradeable information from financial data

- Measures how some financial data can deviate from reality whilst remaining internally coherent.

- Trading opportunity when this internal coherence is assumed erroneously to be the same as correctness.

Plotinus – From Philosophy to Technology

Philosophical Concept → Scientific Validation

Proof of Concept ← Business Creation

Invest NI Backing → A Northern Irish AI Firm

Plotinus – Growth and Development
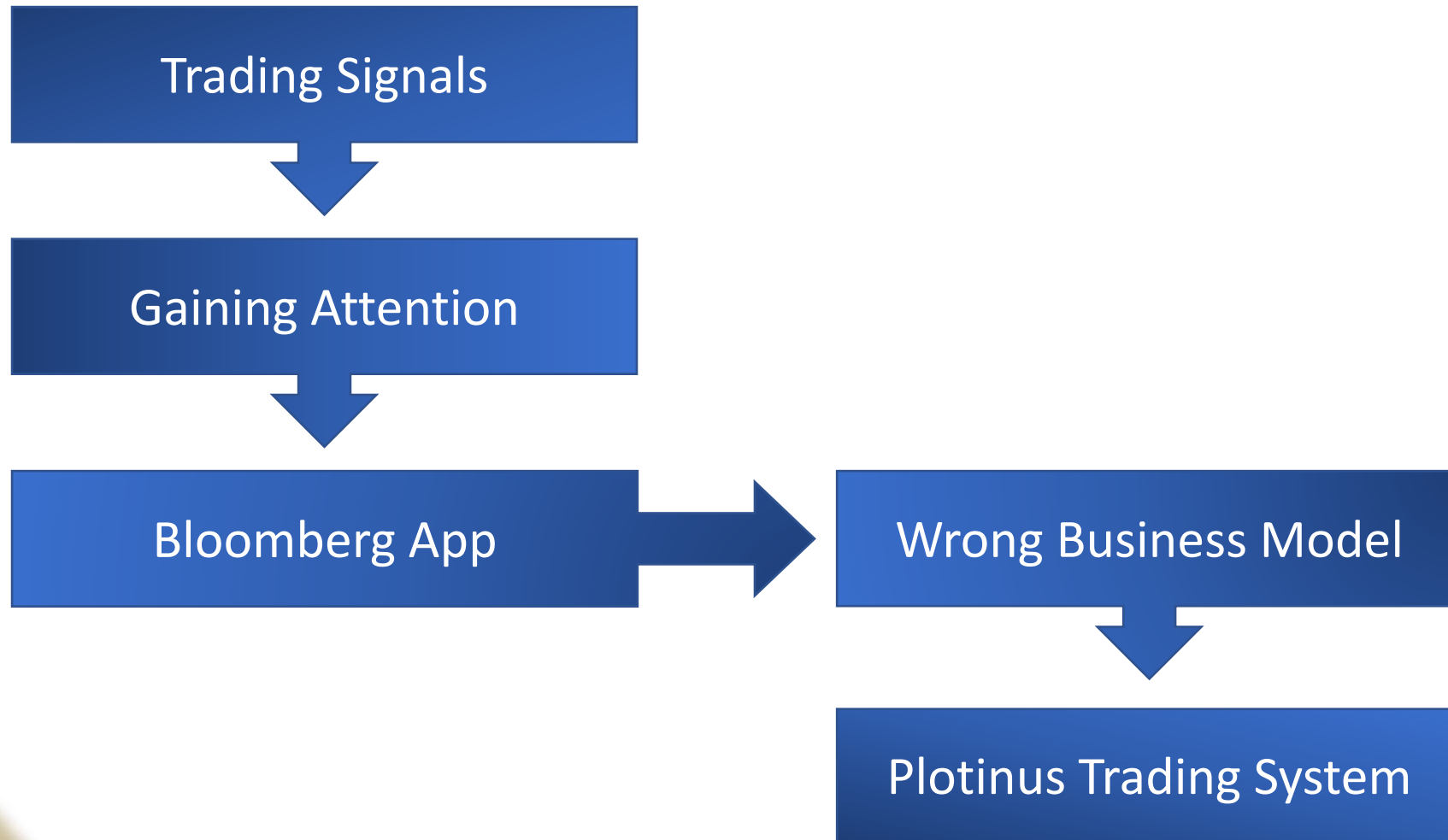
Plotinus – AI Tech to Asset Management

Harnessing Technology → Protecting IP

Building Relationships ← Building Infrastructure

Establishing Presence → Plotinus Asset Management
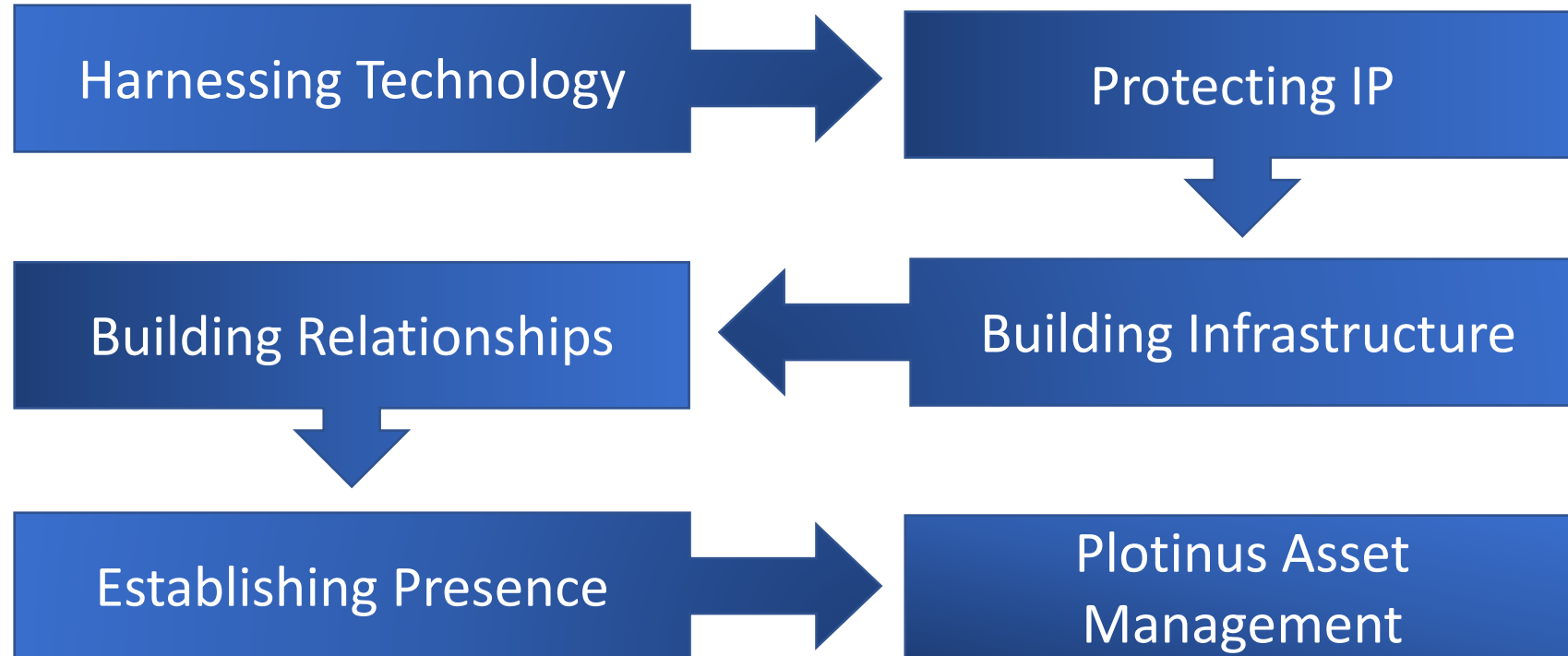
Plotinus – What we expect of ourselves

Re-invent Active Management →

Dominate AI Asset Management →

Continuous Technological Innovation →

Tackling Passive Investment

- A new type of volatility

- Hyper-Sensitivity

- Passive Investment is
  a contributing factor

The Return of Volatility?
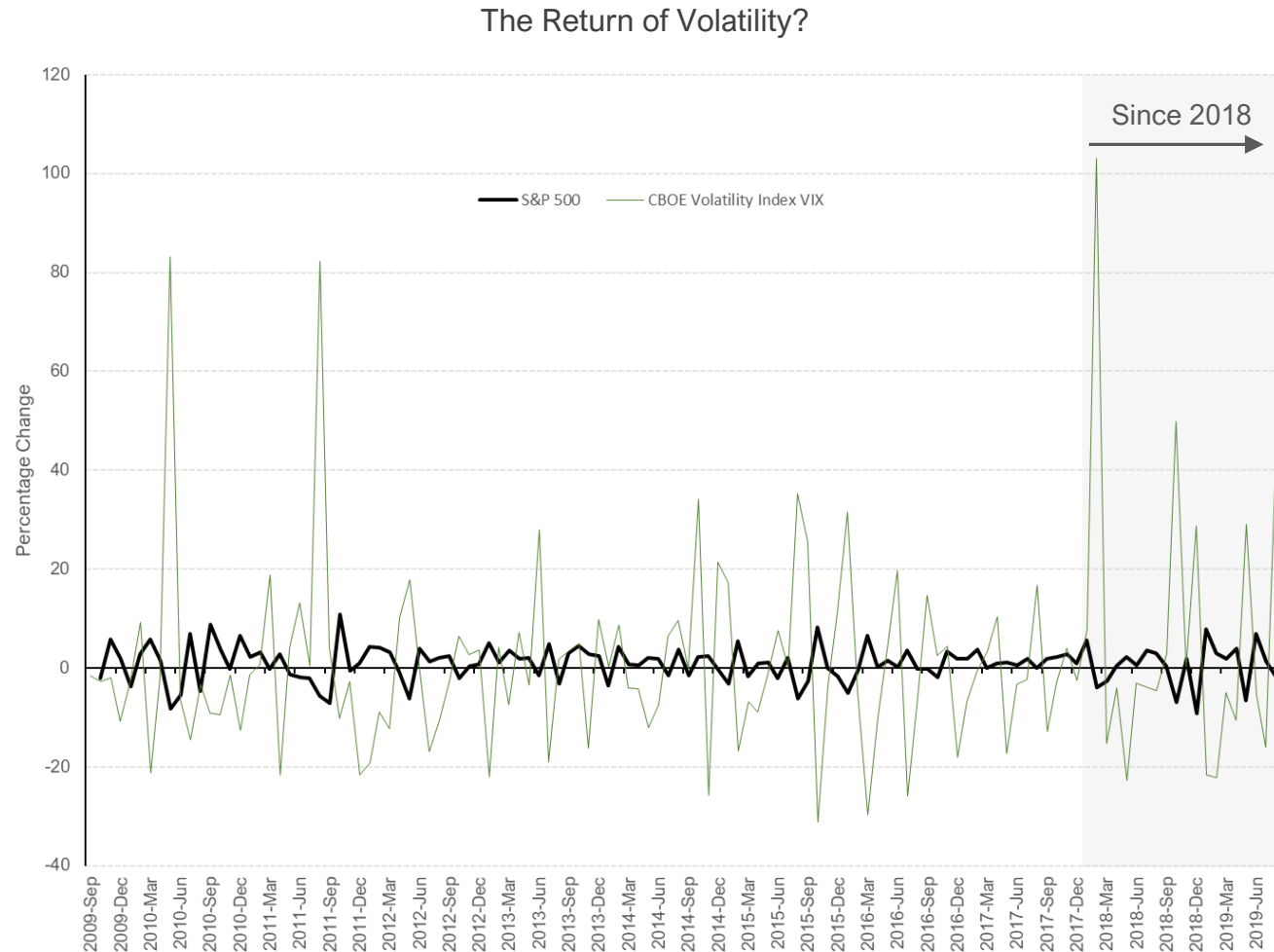
Source: Federal Reserve Bank of St. Louis

How AI Can Help?

- An AI overlay

- Incisive

- Effective

- Reduces Exposure to the Passive Index

Protective

- Downside Protection
- Maintains Long Bias – Like Passive Index Investment
- Mirrors Characteristics – not Behavior
- Internally Diversified

Plotinus 2π Enhanced Index

Key Performance Data

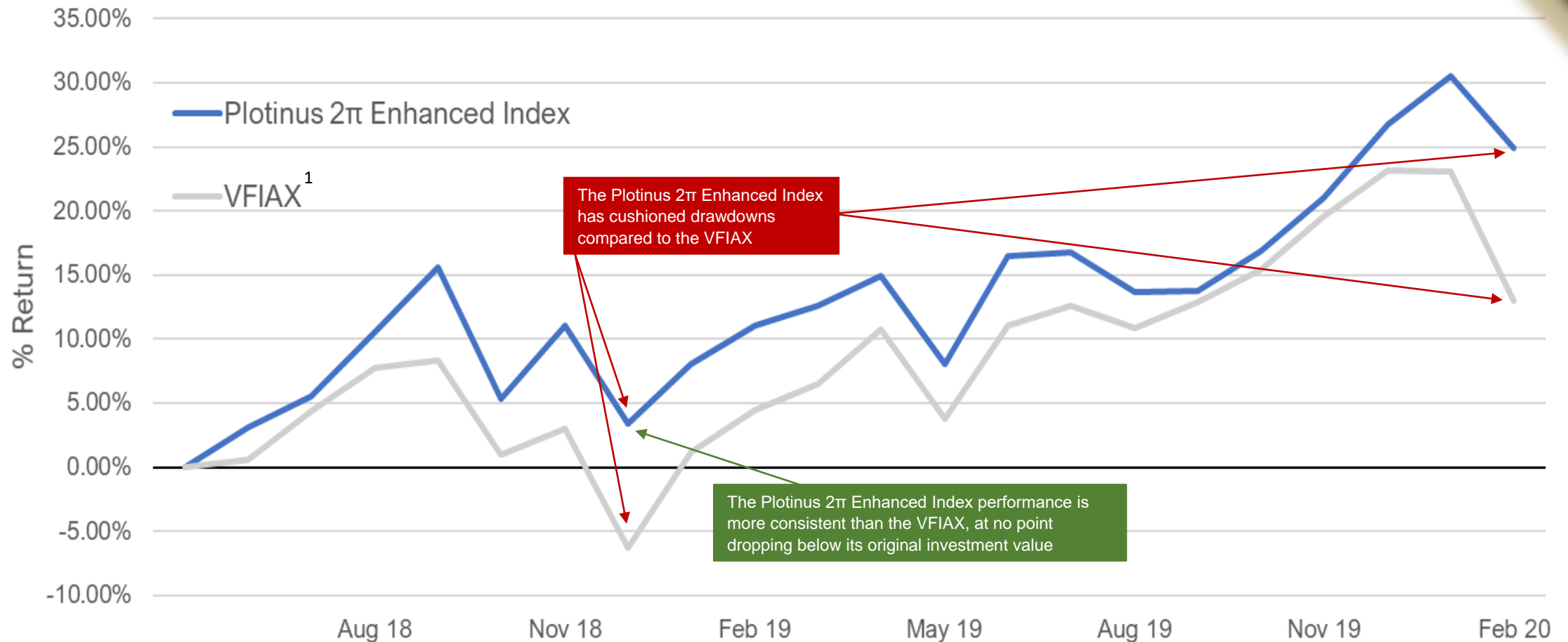|	PEI[Δ]	Benchmark[1]		PEI[Δ]	Benchmark[1]
Return (since inception) (%)	24.95	12.98	Sharpe Ratio wrt 3mth Tbill (since inception)	0.77	0.38
Annualized Volatility (%)	15.39	16.16	Sortino Ratio wrt 3mth Tbill (since inception)	1.11	0.51
Largest Drawdown (%)	-10.63	-13.53	Alpha α (Monthly) wrt S&P 500TR	6.06	-0.03
Drawdown Duration (months)	3	3	Correlation wrt S&P 500TR	0.89	1.00
Average Monthly Gain (since inception %)	3.32	3.10	% Winning Months (since inception)	76.19	71.43
Average Monthly Loss (since inception %)	-5.75	-5.35	% Losing Months (since inception)	23.81	28.57

1   Benchmark: Vanguard 500 Index Fund Admiral Shares VFIAX. For information concerning Benchmark please consult The Vanguard Group, Inc

Plotinus 2π Enhanced Index

The Plotinus 2π Enhanced Index has cushioned drawdowns compared to the VFIAX

The Plotinus 2π Enhanced Index performance is more consistent than the VFIAX, at no point dropping below its original investment value

1   Benchmark: Vanguard 500 Index Fund Admiral Shares VFIAX. For information concerning Benchmark please consult The Vanguard Group, Inc

All AI is Not the Same

Having the Brand is Not Necessarily Having the Application
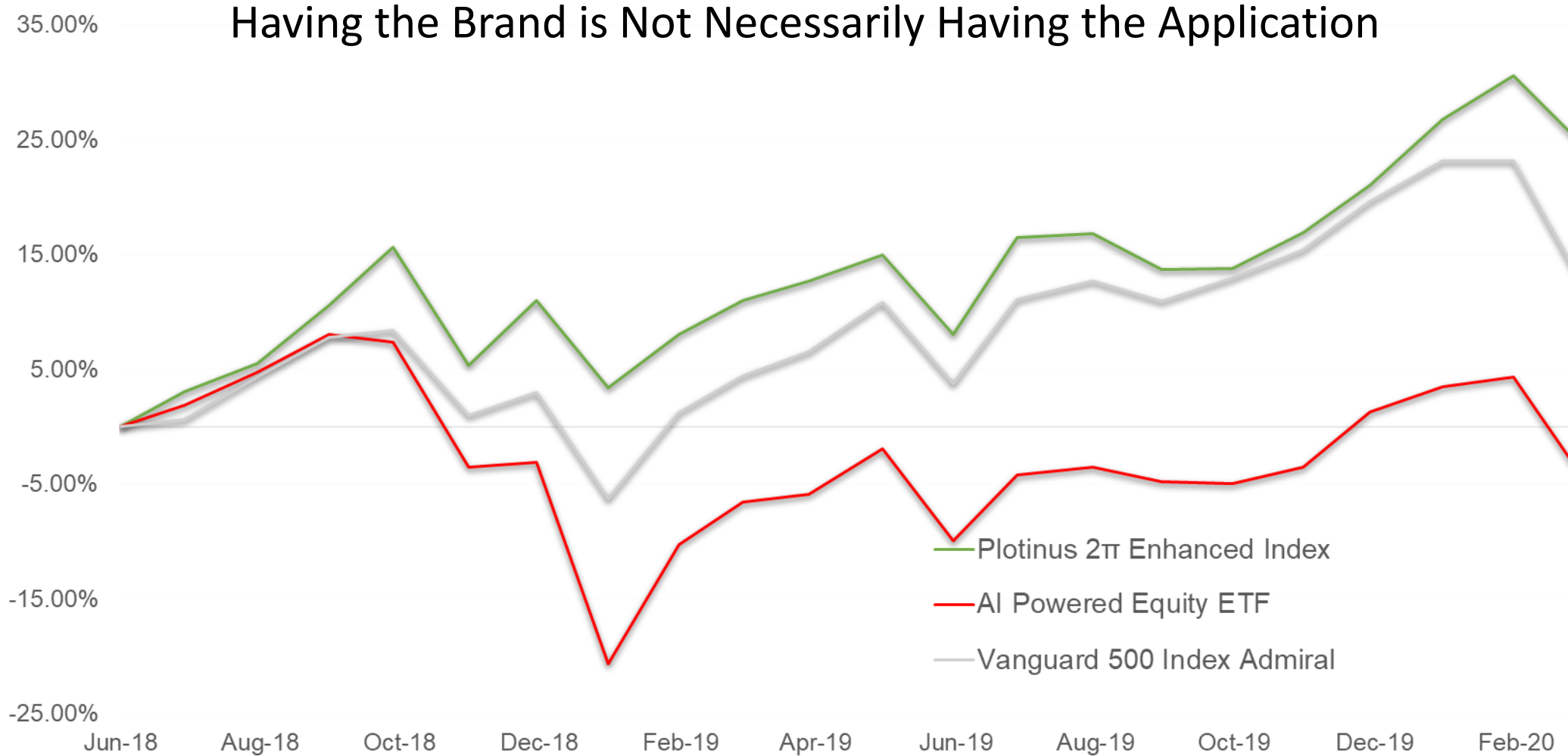
The Plotinus Five Stage Investment Process

- Transparent
- Comprehensible
- Consistent

1   Real Time Derived Data Factor Analytics

2   Trade Specific Analytics

3   Conditional Queries

4   Trade Specific Queries

5   Validation - Execution

S&P 500 Index Price
(E-mini S&P 500 futures contracts)
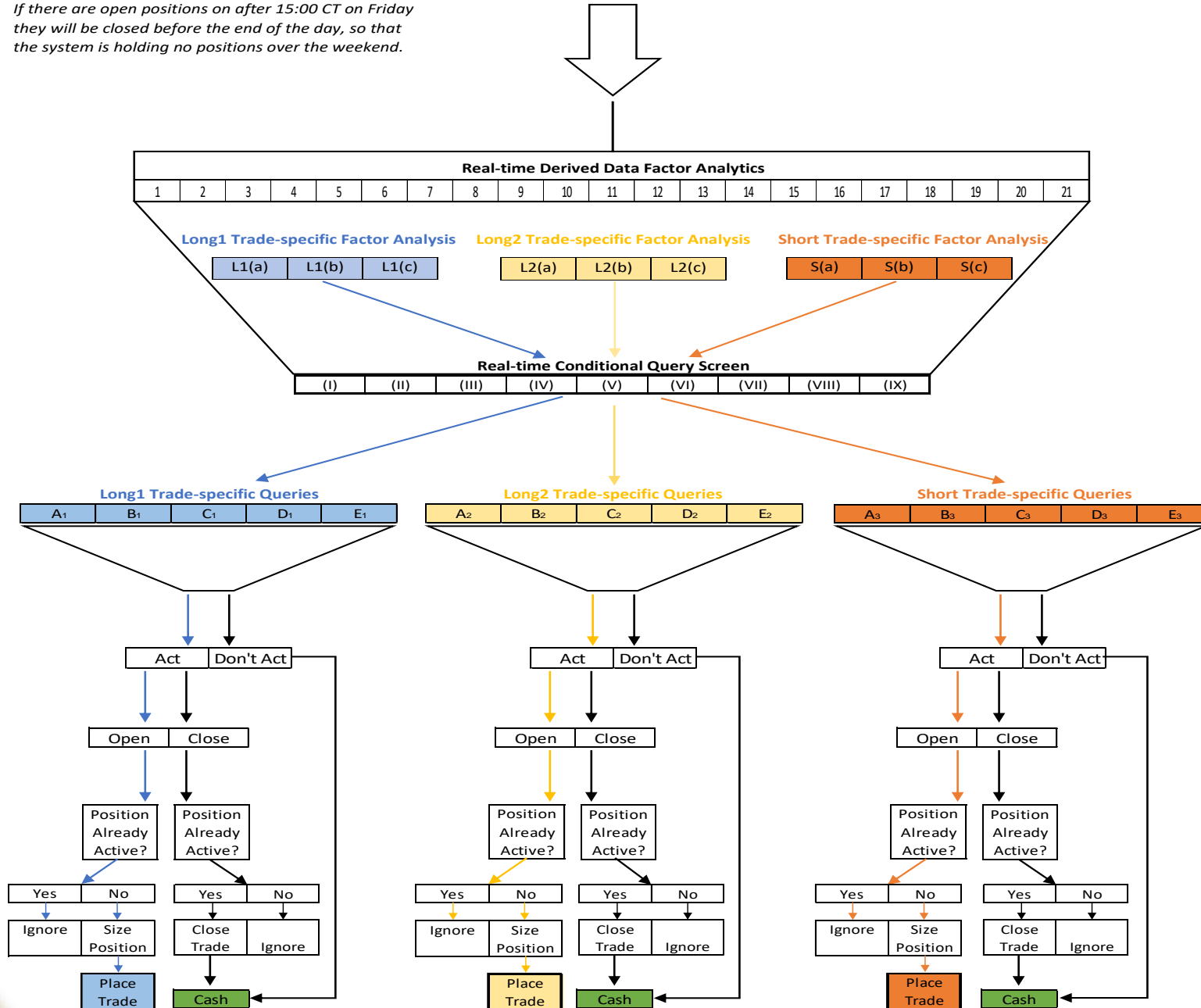
This is a permanent flow.

If there are open positions on after 15:00 CT on Friday they will be closed before the end of the day, so that the system is holding no positions over the weekend.

Real-time Derived Data Factor Analytics

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Long1 Trade-specific Factor Analysis **Long2 Trade-specific Factor Analysis** **Short Trade-specific Factor Analysis**

L1(a)	L1(b)	L1(c)

L2(a)	L2(b)	L2(c)

S(a)	S(b)	S(c)

Real-time Conditional Query Screen

(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)

Long1 Trade-specific Queries

A_1	B_1	C_1	D_1	E_1

Long2 Trade-specific Queries

A_2	B_2	C_2	D_2	E_2

Short Trade-specific Queries

A_3	B_3	C_3	D_3	E_3

Long1

Act	Don't Act

Open	Close

Position Already Active? — Position Already Active?

| Yes | No | | Yes | No |

Ignore | Size Position | Close Trade | Ignore

Place Trade — Cash

Long2

Act	Don't Act

Open	Close

Position Already Active? — Position Already Active?

| Yes | No | | Yes | No |

Ignore | Size Position | Close Trade | Ignore

Place Trade — Cash

Short

Act	Don't Act

Open	Close

Position Already Active? — Position Already Active?

| Yes | No | | Yes | No |

Ignore | Size Position | Close Trade | Ignore

Place Trade — Cash

What an AI Manager must offer
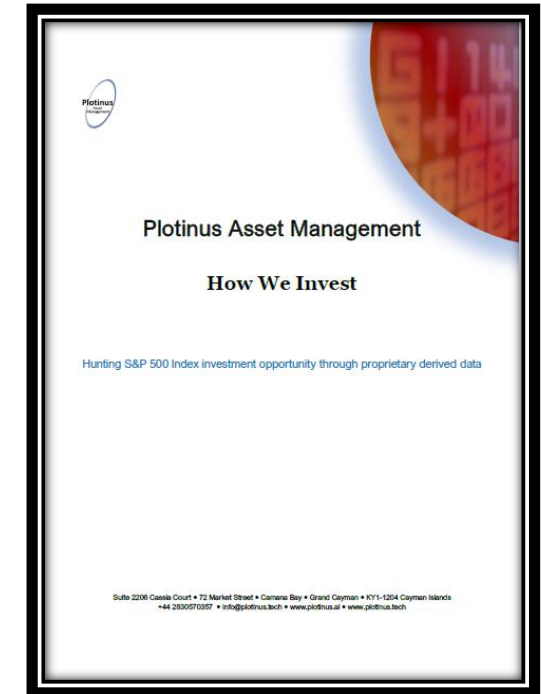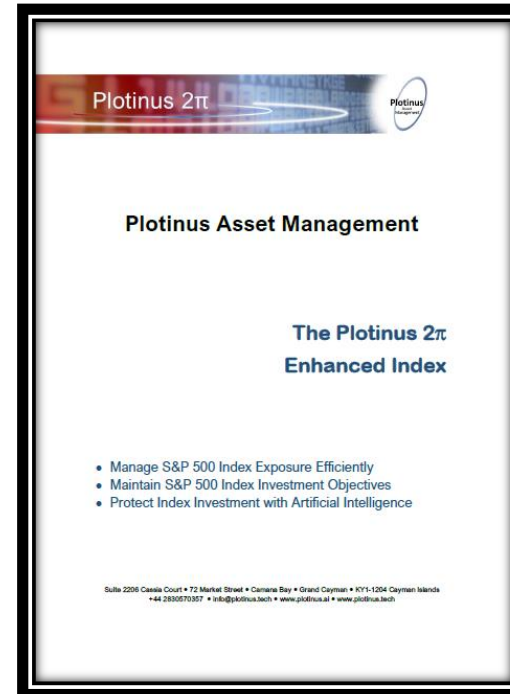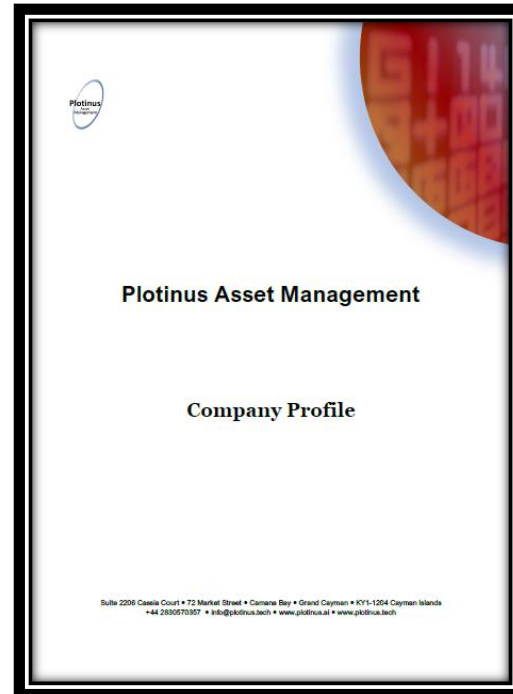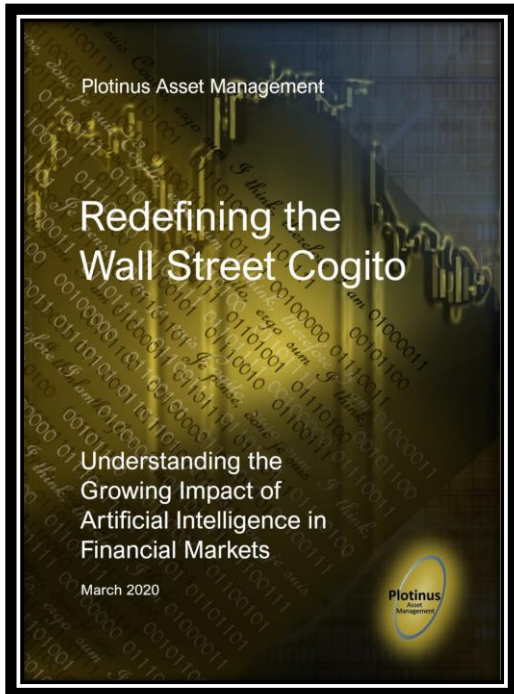
Trust

Process

Explanation

Transparency

- The Investor should not be expected to understand the Technology
- The investment process should be understandable to the Investor

Further Information

The documents below are available on request

Thank You