

**The Markets Now: 16 January, 2017  
The Caledonian Club, 9 Halkin St, London SW1X 7DR**

# **Our new Industrial Revolution: Where to play? How to win?**

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# Investing in our New Industrial Revolution

## Contents of slides

- 1. Progression of a new technology**
  - from idea to development to potential investment in the public markets
- 2. What investment vehicles do we have available?**
  - a very large number!
- 3. Thoughts on how to invest**
  - methods and safeguards
- 4. What returns have been available so far?**
  - analysis of historic returns for investable sectors

# Progression of a new technology sector

## Assess maturity of each sector against these stages

### Angel investor and Venture Capitalist territory

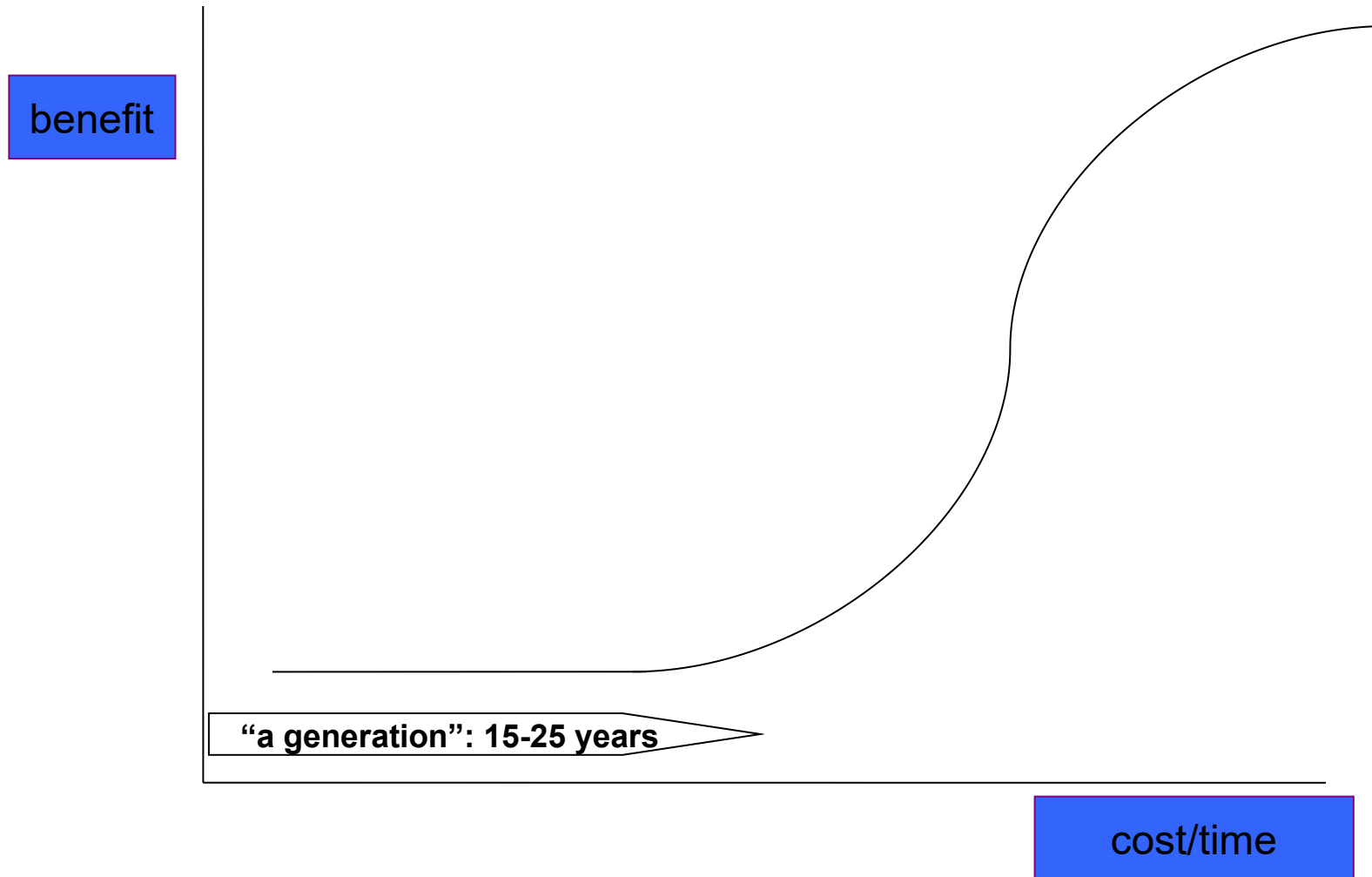
- early start-ups / university spinouts
- several competing technologies in sector, unclear which will win?
- increasing hype and press around 'new breakthrough', but companies losing money
- eventual disillusion as technologies prove not ready
- start-ups fail or 'merge', money lost, negative press
- survivors struggle on, quietly make progress
- industry incumbents start to acquire the winning start-ups
- challengers grow fast enough to challenge incumbents
- new phase of press interest (mostly technology press initially)

### Public markets

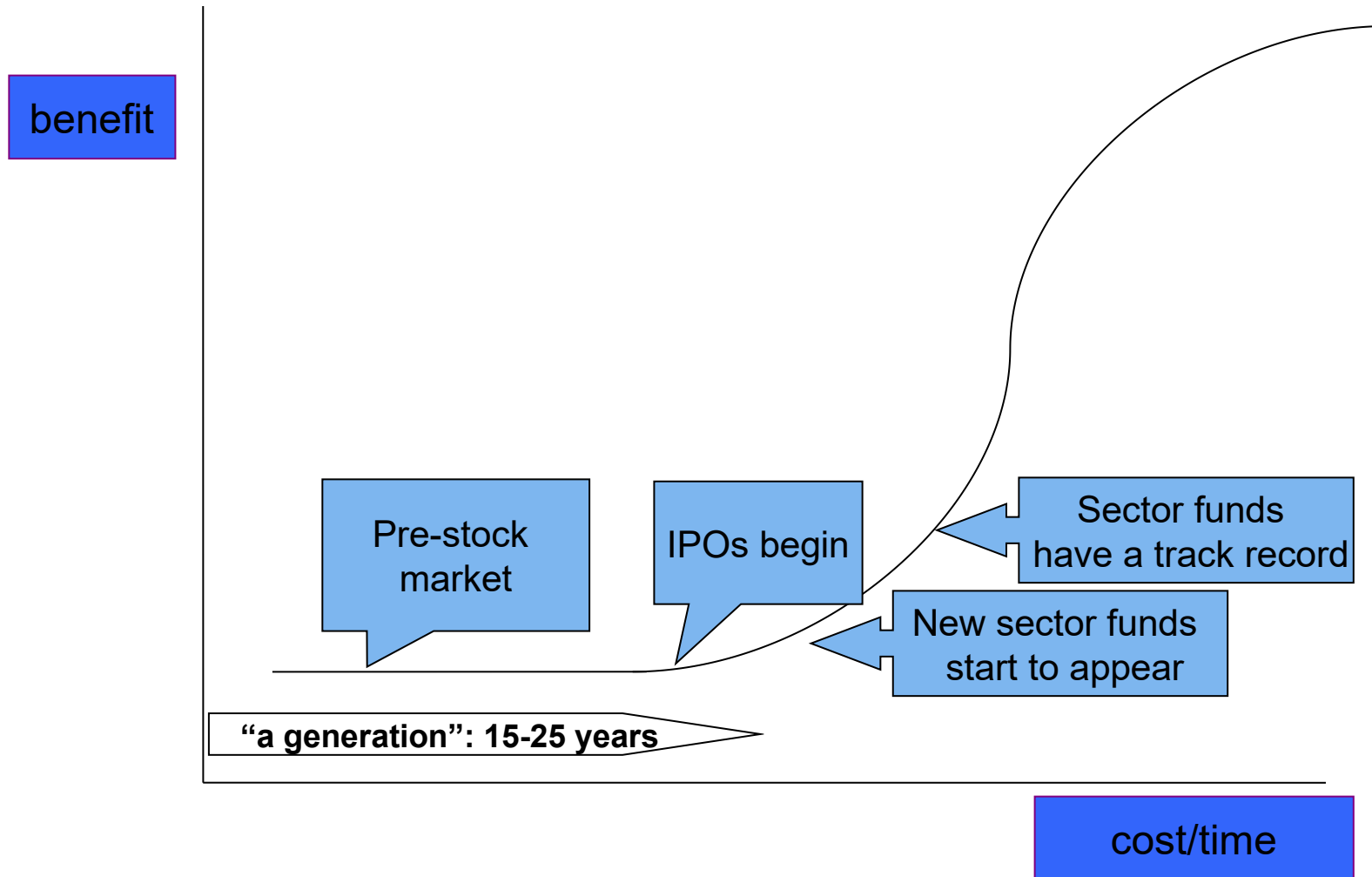
- IPOs allow investment in individual companies, but high risk. Many lose money for investors post-IPO, only a few flourish
- sector-specific ETFs start to appear. Many do poorly initially. Some close
- finally, sector-specific funds have decent track records; we can assess which to buy

# Those steps take many years

## S-curve of technology development



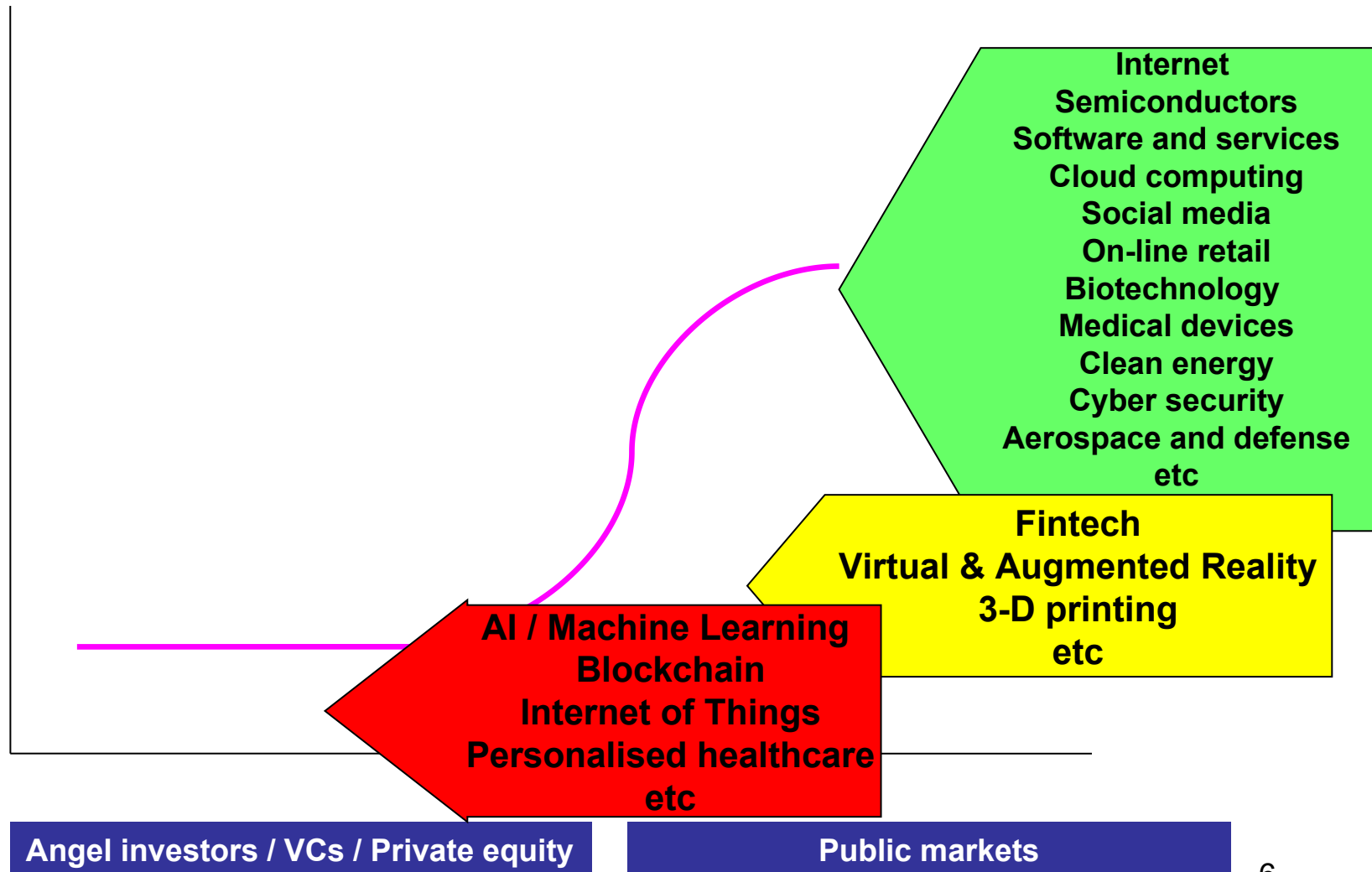
# S-curve of technology development



# Current phase of development of technologies

**Green** means already investable via stock markets

**Yellow** means just becoming investable



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  - analysis of historic returns for all investable sectors.

**I mostly use funds to invest  
in our new industrial revolution,  
as individual shares are much more volatile**

**There is no shortage of funds to use.**

**I monitor performance of ~150 funds  
in 25 sectors; and general technology funds**

**Brokers differ in which ones they offer.**

**Individual sectors may be in up-trends or  
down-trends at different times.**



# **My database of general technology funds and sector-specific funds...**

<b>Advanced Manufacturing and Robotics</b>	<b>1</b>
<b>Aerospace and defense</b>	<b>4</b>
<b>Artificial Intelligence</b>	<b>1</b>
<b>Big Data</b>	<b>1</b>
<b>Cloud Computing</b>	<b>1</b>
<b>Cyber Security</b>	<b>2</b>
<b>Energy (Solar Power / Clean Energy / Nuclear etc)</b>	<b>10</b>
<b>Fintech (new finance)</b>	<b>2</b>
<b>Gaming</b>	<b>2</b>
<b>Healthcare (Biotechnology and Pharmaceuticals)</b>	<b>30</b>
<b>Information Technology</b>	<b>4</b>
<b>Internet</b>	<b>6</b>
<b>Internet of Things</b>	<b>1</b>

**...continued on next slide**

## ....continued from previous slide

<b>Internet Retail</b>	<b>1</b>
<b>Medical Technology / Devices</b>	<b>2</b>
<b>Networking</b>	<b>3</b>
<b>3D Printing</b>	<b>1</b>
<b>Semiconductors</b>	<b>5</b>
<b>Social Media</b>	<b>1</b>
<b>Software</b>	<b>4</b>
<b>General technology funds</b>	<b>43</b>
<b>Technology Hardware</b>	<b>1</b>
<b>Telecom</b>	<b>1</b>
<b>Country or Region focused funds (outside USA)</b>	<b>9</b>
<b>Leveraged ETFs</b>	<b>5</b>
<b>Short ETFs</b>	<b>6</b>

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# Thoughts on how to invest in our new industrial revolution

- **Long-term theme: decades of investing opportunities ahead**
- **Gains exceed market significantly.**
  - bigger risk long term to be out of the market than in it
- **Low effort, low trading, long-term hold as much as possible**
  - use mostly weekly or monthly charts
- **These are growth stocks, value criteria seldom work**
- **I use 'trend following' and a 'trailing stop loss'**

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# **Thoughts on how to invest in our new industrial revolution (continued)**

- **Volatility is higher than some other investment themes**
  - one needs rules and process to protect against losses yet not be shaken out during short-term turmoil
- **To reduce volatility, I invest mainly via sector funds and general technology funds**
  - individual companies only if no good funds are available  
eg robotics / Kuka AG
  - requires no more than about 10 investments in funds to spread risk and reduce some volatility
  - balance across sectors
  - I have about 1/3rd in general technology funds, 2/3rd in specialist sector funds

# One key guide for the whole market

**S&P 500 at Markets Now January 18, 2016**

**My Traffic Light Indicators suggested the turmoil 12 months ago would NOT become a major bear market.**

**That proved correct.**

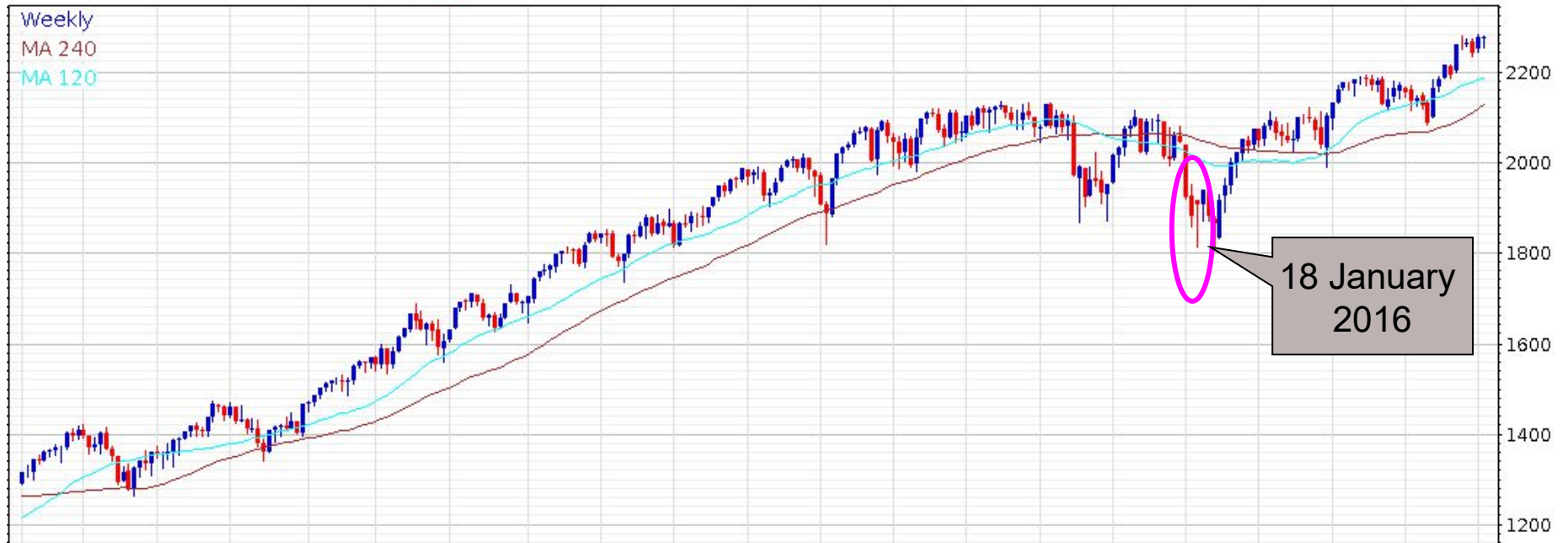


# S&P 500 now

(market close on 13 January 2017)

S&P 500 (SPX INDEX) 2274.64 -2.34

2017-01-13



# My slide from January 2016 Markets Now - as markets were falling rapidly

## Summary: Current market situation

Pattern is typical of a severe market wobble or non-recession bear market; but has not signaled a major bear market in the past, at least back to the 1950s.

The charts with the nearest equivalent patterns are 4th quarter 2011, 2001-2, and 1995.

As I said at Markets Now June 2015, a negative yield curve signals a major bear market with about 70% accuracy, and the other 30% have all started during the summer weak season and been very obvious by October

This is why I go 50% cash from late April/May onward through to late October/early November.

November/December 2015 handed out few buying opportunities that meet my rules. So I am still about 25% cash at the moment. I will go 50% cash again April/May '16.

I have not found much that meets my buy rules, which may indicate the 'correction' needs more time.

Bear markets not accompanied by recession have been mild in the past, so I will just hang in there (and admire the dividends!)

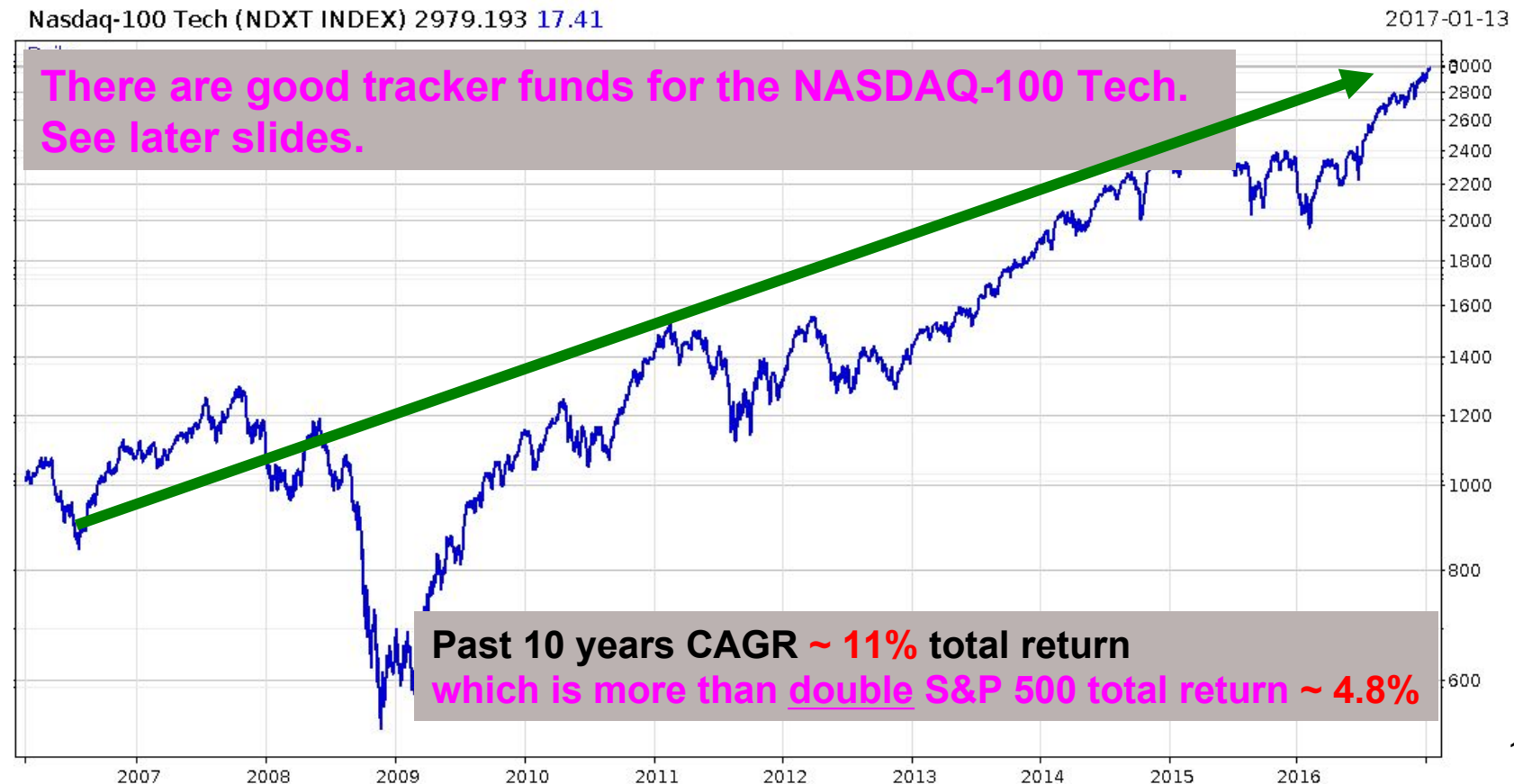
**I apply the Traffic Light Indicators to Industrial Revolution shares too**



# And if we get it completely wrong?

This is what happened if one stayed invested through the 2008 bear market!

**NASDAQ-100 Tech chart showing 2008 fall  
- just a (very painful) blip in the march upwards.**



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# **We can invest very simply based on the NASDAQ-100 Tech Index (NDXT)**

- note this a subset of the NASDAQ index (NDX)

**100 largest USA & international non-financial  
companies listed on Nasdaq.**

**Most major tech industry groups**

- **computer hardware**
- **software**
- **telecommunications**
- **retail/wholesale trade**
- **biotechnology**

**No financial companies or investment companies.**

# NASDAQ-100 and NASDAQ-100 Tech 'trackers': several ETFs

**Note: they differ in their sector holdings**

## **QTEC: First Trust NASDAQ-100 Tech Sector ETF**

- semiconductor and software stocks comprise nearly two-thirds of the ETF
- no biotech

## **QQQ: PowerShares Trust ETF**

- information technology sector accounts for nearly 60% of the fund's portfolio...weighted heavily toward large-cap growth companies (over 50%)

## **EQQQ: Powershares NASDAQ-100 UCITS ETF GBP**

- London-quoted equivalent of QQQ in GBP

## **ONEQ: Fidelity NASDAQ Composite Index ETF**

- weighted toward the information technology, health care and consumer discretionary sectors. Holdings overlap with QQQ

**How have they performed relative to the NASDAQ-100 Tech Index?**

## Comparison of performance of four ETFs that track the NASDAQ-100 or Tech Index

NASDAQ-100 Index grew about DOUBLE the S&P 500 annual total return  
of ~ 4.8% over 10 yrs and 13.8% over past 4 yrs

Fund	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
NASDAQ 100 Tech Index (NDXT)	11% (2006-2) 11.3% (10 yrs) 23.5% (4 yrs)
First Trust NASDAQ-100 Tech Sector ETF (QTEC)	12.3% (2006/4) 11.3% (10 yrs) 18.9 % (4 yrs)
PowerShares Trust ETF (QQQ)	6.2% (1999/3) 11.8% (10 yrs) 17.1 % (4 yrs)
Powershares NASDAQ-100 UCITS ETF (EQQQ) GBP	Opened 2006/12 17% (10 yrs) (1 massive bear mkt). 24.0% (4 yrs)
Fidelity Nasdaq Composite Index ETF (ONEQ)	10% (2003/10) 9.6% (10 yrs) 16.5 % (4 yrs)

**For the brave...2x leveraged ETFs  
based on the NASDAQ-100 or Dow Jones Tech Index  
(Not long term holds!)**

Fund	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
NASDAQ-100 Tech (NDXT Index)	11% (2006-2) 11.3% (10 yrs) 23.5% (4 yrs)
Powershares Ultra NASDAQ-100 (QLD) Based on NASDAQ-100 non-financials 2x leverage fund	9.3 (10 yrs) 36.7% (4 yrs)
ProShares Ultra Tech (ROM). Based on DJ Tech index. 2x leverage fund	12.3 (>10 yrs, 2007/2) 32.6% (4 yrs)

# Now let's look at individual sector indices

Sector performance since start of each sector index on NASDAQ or S&P 500.

Some have out-performed the NASDAQ-100 Tech Index

Index	CAGR total return Since opening.	
	Past 10 yrs.	Past 4 yrs.
S&P 500 Internet Retail Index (S5INRE)	28.5% (2002-7)	29.3% (10 yrs) 32.5% (4 yrs)
Dow Jones US Internet Index (DJUSNS Index)	19% (2001-12)	12% (10 yrs) 23.3% (4 yrs)
NASDAQ Biotech Index (NBI Index)	15.5% (1993-11)	13.4% (10 yrs) 18.4% (4 yrs)
S&P500 Semiconductors Index (S5SECO Index)	13.5% (1989-9)	7.4% (10 yrs) 22% (4 yrs)
NASDAQ Healthcare Index (IHC Index)	12% (2005-7)	11% (10 yrs) 14.2% (4 yrs)
S&P500 Aerospace and Defense (S5AERO Index)	11.8% (1989-11)	9.1% (10 yrs) 20% (4 yrs)

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For comparison,  
high risk / high effort  
'angel' investing returns  
estimated at 22% pa  
according to NESTA



## Sector Performance (continued)

Index	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
S&P500 Internet Software and Services(S5INSS Index)	<b>11.8% (1999 -1)</b> <b>13.5% (10 yrs)</b> <b>29.6% (4 yrs)</b>
S&P 500 Pharmaceuticals (S5PHAR Index)	9.7% (1989-9) 6.6% (10 yrs) 12.6% (4 yrs)
NASDAQ Telecom Index(CUTL Index)	7.3% (1971-2) 3.3% (10 yrs) 11.3% (4 yrs)
S&P500 Wireless Telecom(S5WIRE Index)	6.5% (1993-6) 1.1% (10 yrs) 4.4% (4 yrs)
S&P 500 Information Technology INDEX (SPLRCT)	9.8% (2005/10) 9.6% (10 yrs) 16 % (4 yrs)
KBW NASDAQ Financial Technology Index (KFTX)	Launched 2016/7

# Have funds managed to equal or beat the index?

Sector specialist funds: **Software**

Benchmark: S&P500 Internet Software & Services Index **+11.3%** over 18ys

<b>Fund</b>	<b>CAGR total return Since opening. Past 10 yrs. Past 4 yrs.</b>
<b>Powershares Dynamic Software Portfolio (PSJ)</b>	<b>11.6% (2005/6) 10.7% (10 yrs) 16.7% (4 yrs)</b>
<b>iShares North American Tech-Software ETF (IGV)</b>	<b>7 % (2001/7) 10.8% (10 yrs) 16% (4 yrs)</b>
<b>SPDR S&amp;P Software and Services ETF (XSW)</b>	<b>18.2% (2011/9)</b>

# Have funds managed to equal or beat the index?

Sector specialist fund: **Internet**

Benchmark: Dow Jones US Internet Index **+19%** over 15 years

Index	CAGR total return Since opening.
	Past 10 yrs.  Past 4 yrs.
First Trust Dow Jones Internet Index Fund (FDN)	15.2% (2006-6) 14.7% (10 yrs) 22% (4 yrs)
SPDR S&P Internet ETF (XWEB)	6m data only (2016-6)
Powershares NASDAQ Internet ETF (PNQI)	15.7% (2008-6) 20.6% (4 yrs)
ARK Web x.0 ETF (ARKW)	11.6% (2014-9)

# Have funds managed to equal or beat the index?

Sector specialist funds: **Healthcare**

NASDAQ Biotech Index **+15.5%** over 22 years

NASDAQ Healthcare Index **+12.0%** over 11.5 years

Fund	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
Worldwide Healthcare Trust (WWH)	16.0% (1995/4) 16.7% (10 yrs) 26.3% (4 yrs)
First Trust AMEX Biotech Index Fund (FBT)	17% (2006/6) 16% (10 yrs) 21.3% (4 yrs)
streetTRACKS SPDR Biotech ETF (XBI)	14.9% (2006/2) 15.8% (10 yrs) 20.7% (4 yrs)
AXA Framlington Health Fund	13.1% (1993/7) 13.4% (10 yrs) 20.4% (4 yrs)
Biotech Growth Fund (BIOG)	11.1% (1997/6) 21.4% (10 yrs) 25.4% (4 yrs)

# Have funds managed to equal or beat the index?

Sector specialist funds: **Information Technology**

Benchmark: S&P 500 Information Technology INDEX (SPLRCT)

**+9.6%** (10 yrs), **+16%** (4 yrs)

Fund	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
Vanguard Information Technology VIPERS (VGT)	8.7% (2004/2) 10.1% (10 yrs) 16.3 % (4 yrs)
PowerShares S&P SmallCap Information Technology Index ETF (PSCT)	16.9% (2010/4) 22.2% (4 yrs)
Fidelity MSCI Information Technology Index ETF (FTEC)	2013 opening 13.9% (3 yrs)
iShares V plc S&P 500 Information Technology Sector GBP (IITU)	2016/7 opening
iShares S&P 500 Information Technology Sector UCITS ETF (IUIT)	2015/11 opening

# Have funds managed to equal or beat the index?

Sector specialist Funds: **Aerospace and defense.**  
 S&P500 Aerospace and Defense Index **11.8%** over 27 years.

Fund	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
Powershares Aerospace and Defense (PPA) USA	10.7% (2005/10) 9.6% (10 years) 19.3% (4 years)
iShares Dow Jones Aerospace and Defense Index Fund (ITA) USA	11% (2006/5) 11.4% (10 years) 22% (4 years)
SPDR S&P Aerospace & Defense ETF (XAR) USA	Opened 2011/9 18.2% (4 years)
Fidelity Defense and Aerospace (FSDAX)	9.8% (1989/9) 5.8% (10 years) 11.5% (4 years)

# Have funds managed to equal or beat the index?

Sector specialist Funds: **Internet retail**

Benchmark: S&P500 Internet Retail Index CAGR **+28.5%** over 14.5 years

Despite the stellar performance of internet retail, the first US-focused Internet Retail specialist fund was launched only in April 2016: **IBUY - Amplify Online Retail ETF**. Little track record yet.

**EMQQ - Emerging Markets Internet & eCommerce ETF (US)** launched in 2014 but has had poor performance.

An alternative is shown below. It covers both general retail and internet retail.

Index	CAGR total return Since opening.
	Past 10 yrs. Past 4 yrs.
VanEck Vectors Retail Fund (RTH)	7.5% (2001-5) 10.5% (10 yrs) 16.9% (4 yrs)

# Have funds managed to equal or beat the index?

Sector specialist funds: **Semi-conductors**

Benchmark: S&P 500 semiconductor index **+13.5%** over 27 years

Fund	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
ProShares Ultra Semiconductors (USD) <b>2x leverage</b>	8.1% (2007/2) <b>8.1% (10 yrs)</b> <b>49% (4 yrs)</b>
streetTRACKS SPDR semiconductor ETF (XSD)	8.4% (2006/2) <b>9.7% (10 yrs)</b> <b>28.1 % (4 yrs)</b>
iShares PHLX Semiconductor ETF (SOXX)	4.6% (2001/7) 8.5% (10 yrs) 24.4% (4 yrs)
VanEck Vectors Semiconductor ETF (SMH)	<b>19.3% (2011/12)</b> <b>22.7% (4 yrs)</b>
Powershares Dynamic Semiconductor Portfolio (PSI)	9% (2005/6) <b>9% (10 yrs)</b> <b>27.8% (4 yrs)</b>



# Other new sectors now investable via ETFs:

## Cyber security

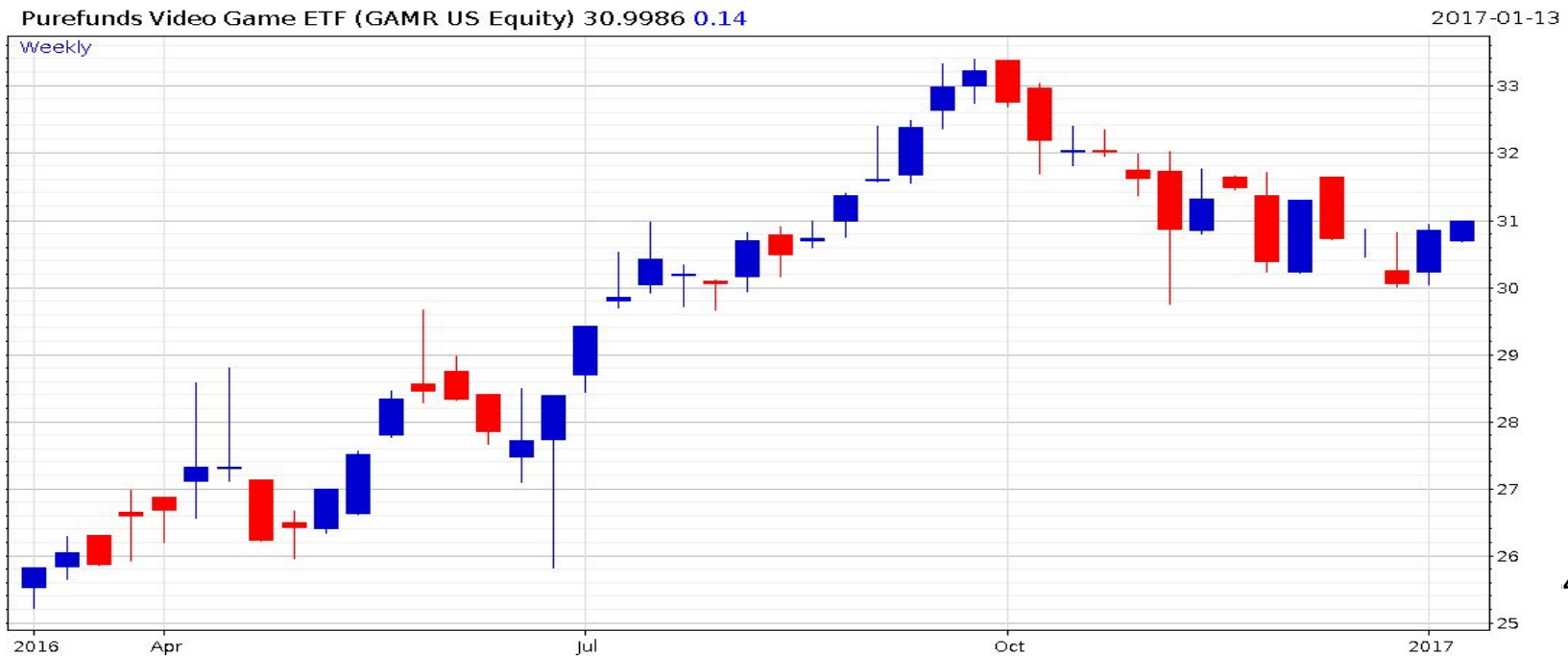
Fund	
PureFunds ISE Cyber Security ETF (HACK)	launched 2014/11
First Trust NASDAQ Cybersecurity ETF (CIBR)	launched 2015/06



# Other new sectors now investable via ETFs:

## Gaming / Virtual Reality / Augmented Reality

Fund	
Purefunds Video Game ETF (GAMR)	launched 2016/03
Market Vectors Gaming Tech ETF (BJK)	launched 2008/01



## Other new sectors now investable via ETFs: Fintech

Fund	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
Global X Fintech Thematic Index (FINX)	launched 2016/9
Purefunds Solactive Fintech ETF (FINQ)	launched 2016/9

## Other new sectors now investable via ETFs: Robotics & Artificial Intelligence

Fund	CAGR total return since opening
Global X Robotics & Artificial Intelligence Thematic ETF (BOTZ)	launched 2016/09

## Other new sectors now investable via ETFs: Internet of Things

Fund	CAGR total return since opening
Global X Internet of Things Thematic ETF (SNSR)	launched 2016/9

**We can also invest via  
general technology funds**

# Top Performing UK General Technology Funds

Fund	CAGR total return Since opening. Past 10 yrs. Past 4 yrs.
Scottish Mortgage Trust (SMT) UK	<b>10.5% (1989/5)</b> (includes 1 mini & 2 massive bear markets) <b>12.8% (10 yrs) (1 bear mkt)</b> <b>21.8% (4 yrs)</b>
Polar Capital Trust (PCT) UK	<b>12.7% (1996/12)</b> (includes 2 massive bear markets) <b>14.5% (10 yrs) (1 massive bear mkt).</b> <b>23.8% (4 yrs)</b>
Legal & General Global Technology Fund (LEGGTII LN) UK	<b>13% (10 yrs) (1 massive bear mkt).</b> <b>23.3% (4 yrs)</b>
Powershares Powershares NASDAQ-100 UCITS ETF (EQQQ) GBP	Opened 2006/12 <b>17% (10 yrs) (1 massive bear mkt).</b> <b>24.% (4 yrs)</b>

## Final thoughts (1)

- **Our new industrial revolution is gathering pace**
  - **Technologies are synergising to produce more new technologies**
- **Technology development cycles can be used to assess which technologies are becoming investable via public markets**
- **Entering a sector at the right time can be very rewarding**
- **Reviewing the returns (CAGR) of sectors illustrates gains more than double the stock market**
- **Even with the volatility, it's best to be invested in our new industrial revolution**



## Final thoughts (2)

- **There are some excellent UK and US general technology funds enabling simple participation**
  - **US: QTEC and QQQ which track the NASDAQ-100**
  - **UK: PCT, SMT, L&G Global Technology Fund, EQQQ etc**
- **There are some sectors / investment funds which have matched or outperformed the NASDAQ-100**
  - **Internet (FDN, PNQI)**
  - **Internet retail (RTH)**
  - **Semiconductors (SMH, SOXX, PSI, XSD)**
  - **Information Technology (VGT, PSCT)**
  - **Software and Services (PSJ, IGV, XSW)**
  - **Biotechnology (WWH, BIOG, XBT, FBI, Axa Framlington Health)**
  - **Defense (PPA, ITA, XAR)**
- **Also, new sector-specific funds are appearing regularly as new sectors become investable**
- **The New Industrial Revolution theme will make interesting and rewarding investing for decades ahead.**

**Thank you**