



IRISIUM

DETECT. REPORT. PROTECT. COMPLY.

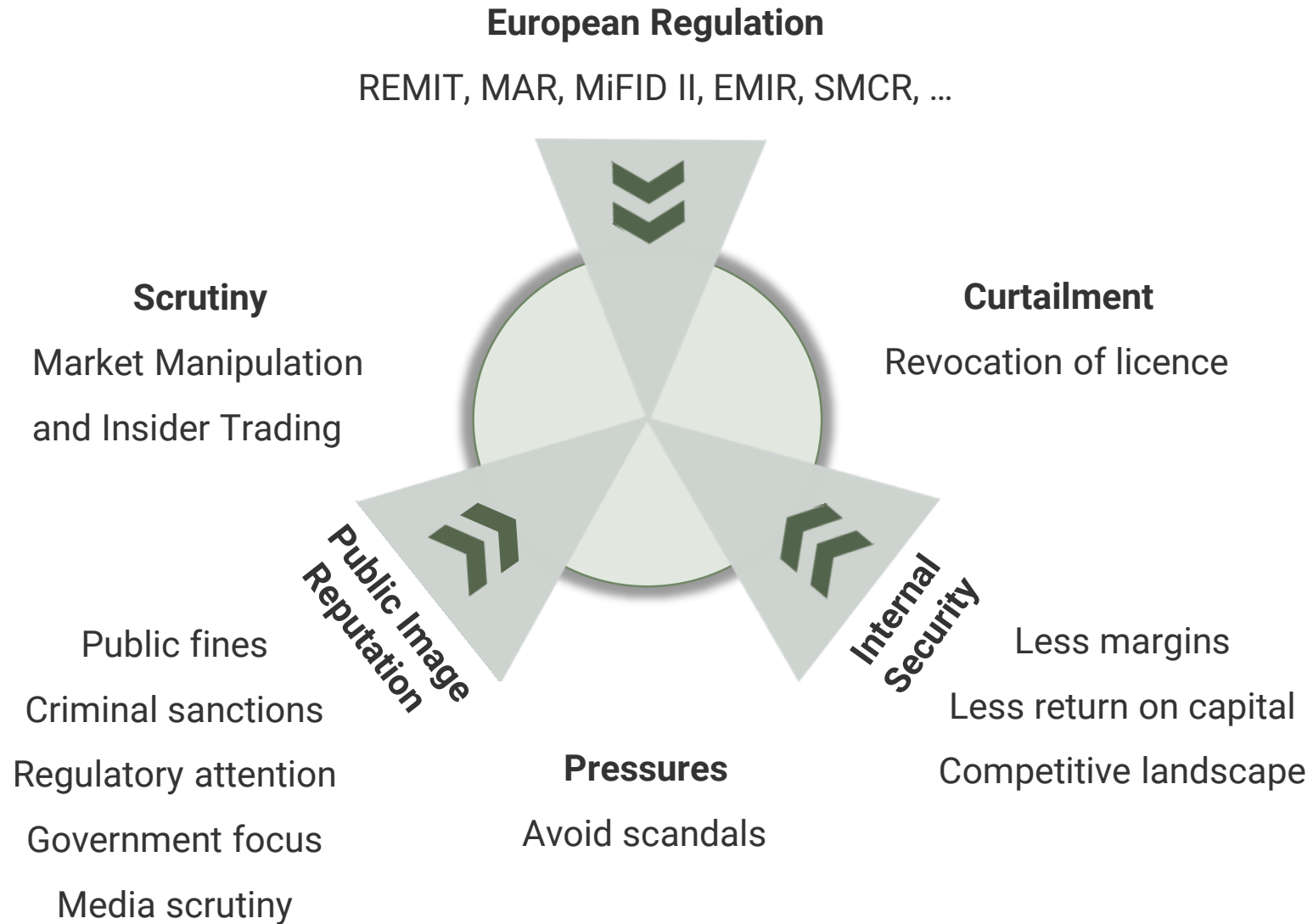
**COMPLIANCE WITH REMIT:
A MARKET PARTICIPANT'S PERSPECTIVE**

9th October 2018

MY JOURNEY IN ENERGY COMMODITIES & COMPLIANCE TECHNOLOGY

- Saeed Patel - Director of Product Strategy at Irisium Limited
 - Irisium is a UK based technology firm specialising in delivering trade surveillance solutions to Energy Trading Houses, Financial Investment Firms, Regulators and Exchanges
 - Owned by KRM22 plc and Cinnober Financial Technology
- 25 years energy commodities experience at EDF Trading Markets Limited and National Grid Group plc holding compliance and technology leadership roles
 - Global Trade Surveillance Solution covering REMIT, MAR and Dodd Frank Act
 - Holistic communication surveillance (electronic and voice communications)
 - Regulatory transaction reporting covering REMIT, EMIR and MiFID II
 - Regulatory record keeping and data retention
 - EFET representative on ACER REMIT Working Group for TRUM and Surveillance Monitoring
 - Co Chair of EFET Transaction Reporting Working Group
 - EFETnet Steering Committee for standardisation of data exchanges

CATALYSTS FOR TRADE SURVEILLANCE



REGULATORY CONTEXT

- Since the global financial crises in 2008 the regulatory landscape has increased with a plethora of new regulations with specific provisions related to the prevention of market manipulation and the use of inside information covering financial derivatives and physical wholesale markets
- Regulators expect automated trade surveillance systems integrated into regulated firms compliance programmes demonstrating a robust culture of compliance
- Regulators have significant enforcement powers with civil and criminal powers for market manipulation and inside information
- The complexity of compliance information requirements including monitoring and reporting of Suspicious Transaction Reports is increasing with regulators taking a firm stance for failure to comply
- Physical wholesale regulators and financial regulators have data sharing agreements in place and increasingly take joint enforcement action due to the interdependency of wholesale power and gas markets with financial derivatives.

REGULATORY FINES FOR MARKET MISCONDUCT

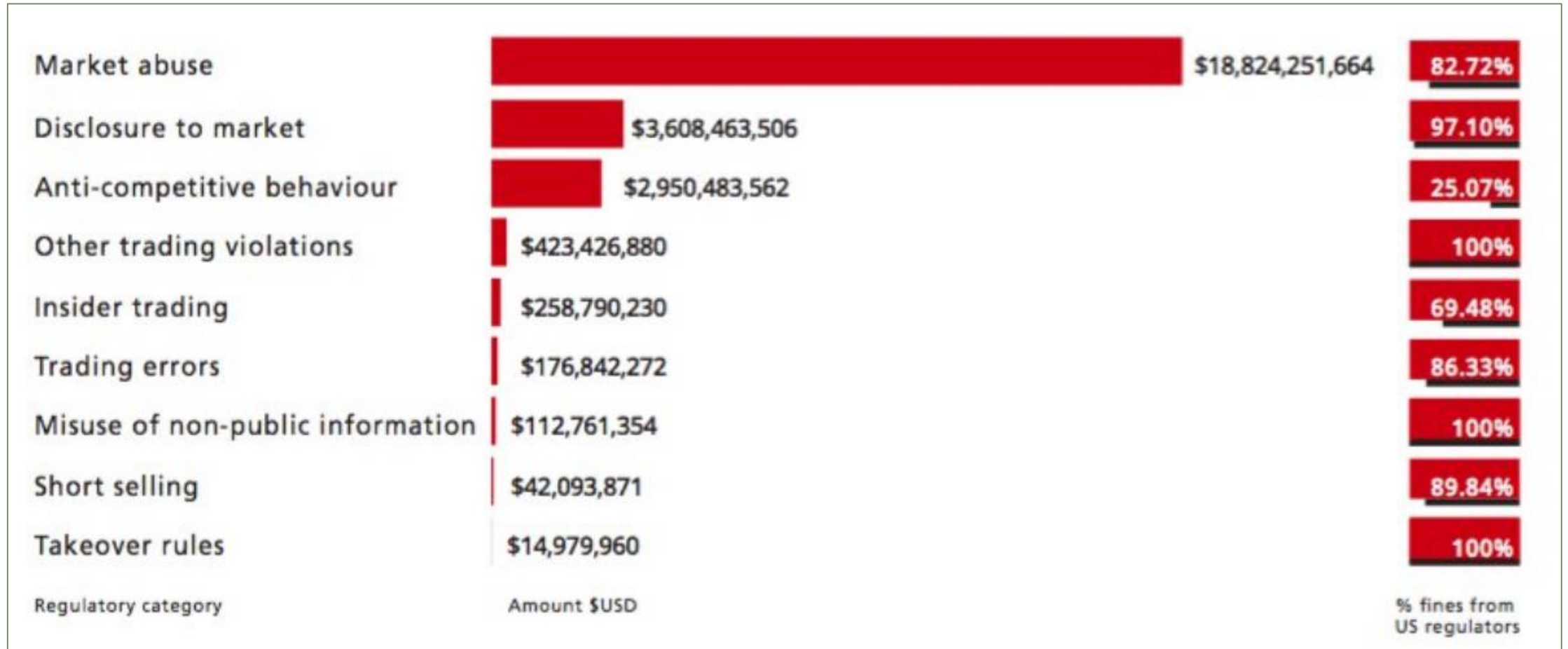


- Global regulators have levied over **\$26 billion in market conduct fines since 2012**, with a sharp increase in 2017¹
- The US is the global financial enforcer. The majority of fines were imposed by US regulators, on both US-based and international institutions
- Globally, **139 senior executives faced market bans** and **28 people were sentenced to prison** for financial crimes during the last five years
- More than **70% of the total fines were for market abuse cases**
- Almost 80% of fines (**\$20.6 billion**) were issued by **US regulators**, the majority of which (85%) related to market abuse and disclosure
- **The UK's Financial Conduct Authority (FCA)** accounted for **\$3.7 billion** of the conduct fines handed out over the same period
- **European banks** are not safe from US regulators: nearly half (**47%, or \$9.7 billion**) of all fines levied by US regulators were imposed on banks based in the UK, France, Germany, and Switzerland, indicating that US regulators are treating foreign and domestic banks in similar ways
- A substantial portion of the fines related to the LIBOR rigging scandal in 2012, in which traders at a number of banks artificially manipulated the interest rate at which banks lend to each other to increase profits.
 - British trader Tom Hayes in 2015 became the first person to be sentenced to jail for rigging LIBOR. He was sentenced to 11 years in prison

Note 1: Source Corlytics Research Analysis published January 2018 covering the 5 year period 2012 to 2017

REGULATORY FINES FOR MARKET MISCONDUCT

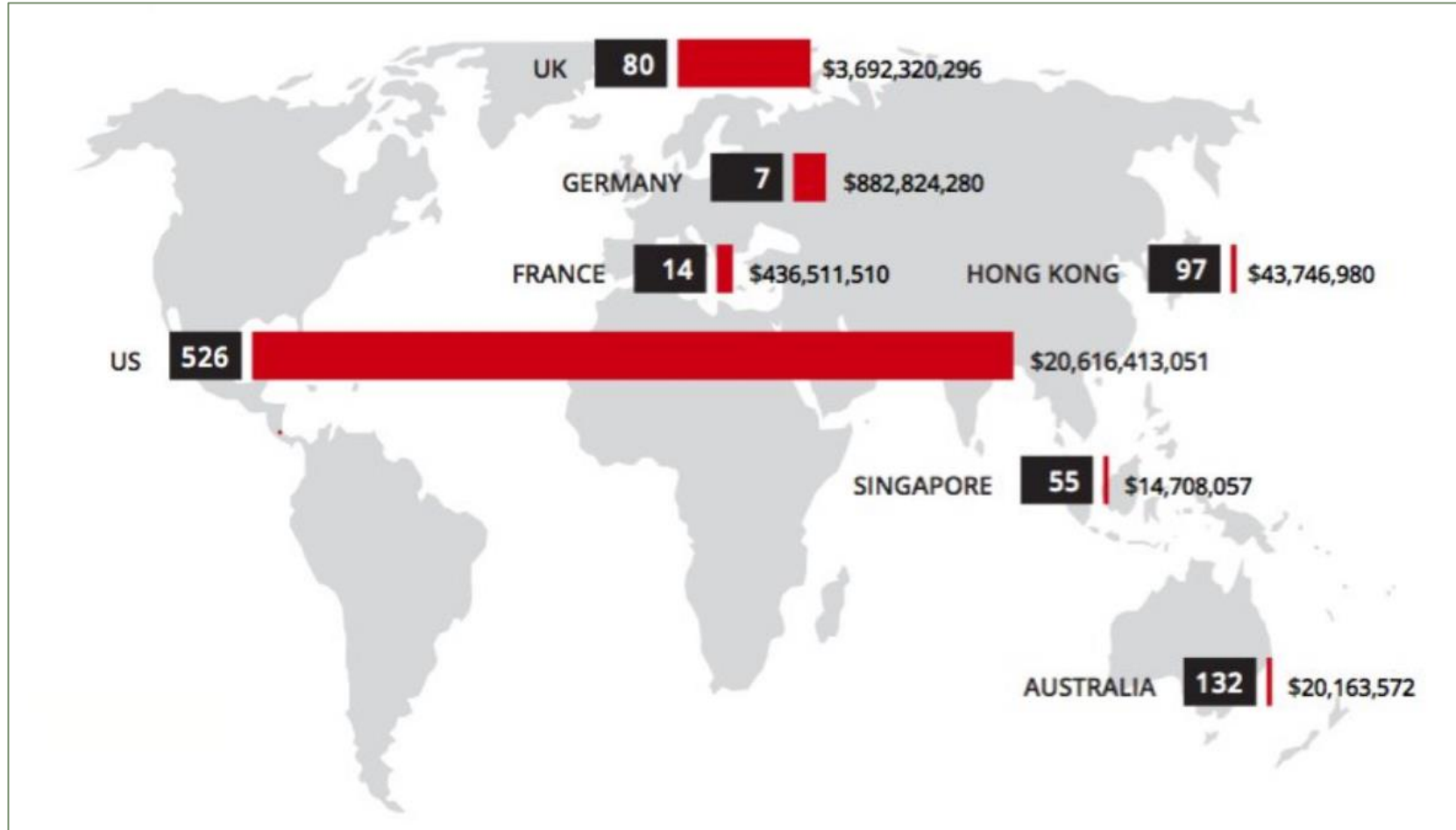
Overview of regulatory fines for market misconduct by category
2012 to Q3 2017



Source: Corlytics Research Analysis published January 2018

REGULATORY FINES FOR MARKET MISCONDUCT

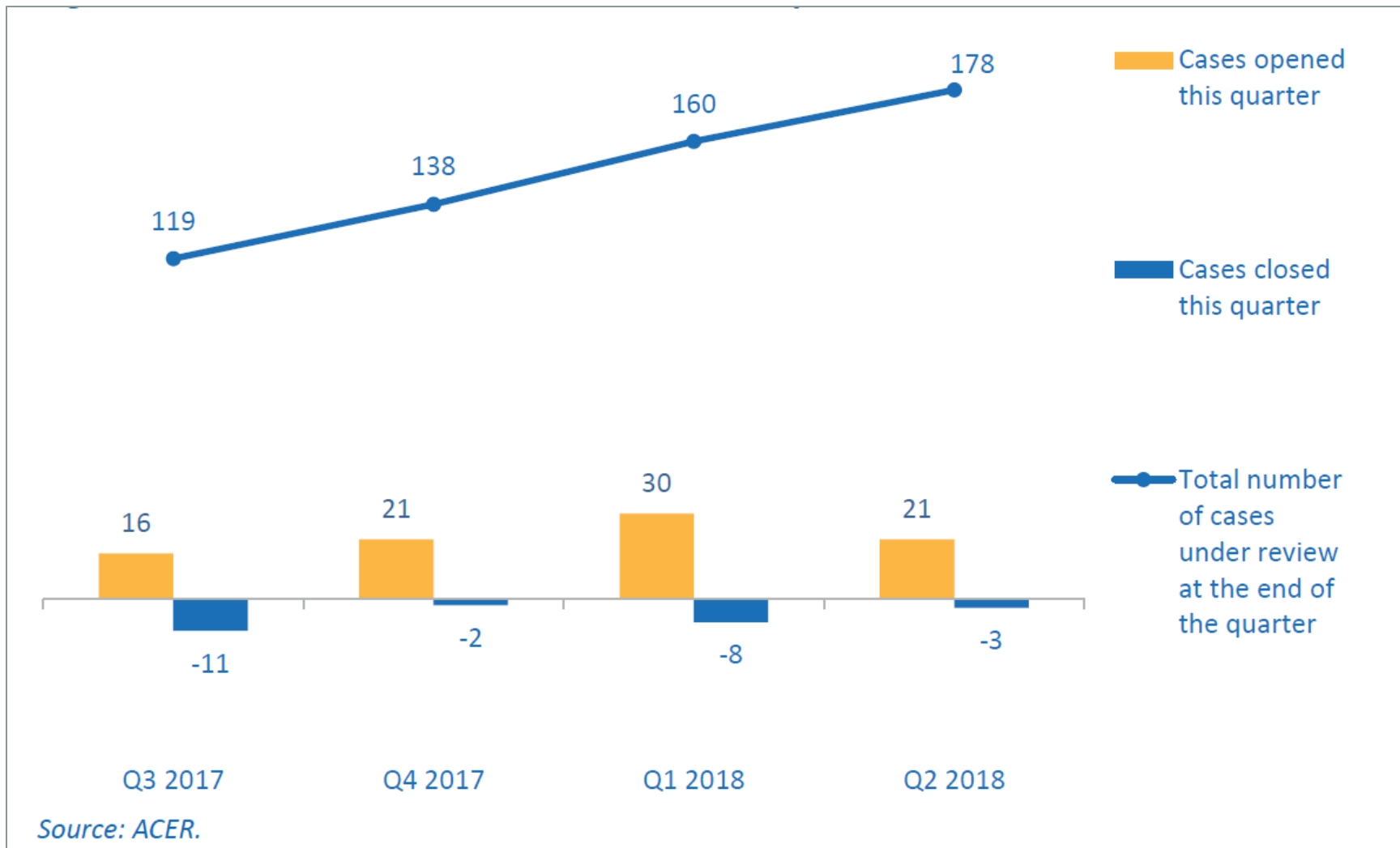
Overview of regulatory fines for market misconduct by number of firms & individuals by jurisdictions
2012 to Q3 2017



Source: Corlytics Research Analysis published January 2018

REMIT CASES CONTINUE TO RISE

ACER REMIT Quarterly Report Q2 2018



GLOBAL REGULATION ON MARKET CONDUCT RULES INCREASING

2008



Global
financial
crisis

Jul 2010 Dec 2011 Dec 2012 Mar 2013 Jul 2015 Oct 2015 Mar 2016 Jul 2016 Jan 2018 Dec 2019



Dodd Frank Wall Street Reform & Consumer Protection Act (US Dodd-Frank)

Financial derivatives market

Prohibits market manipulation and insider trading

Reporting of derivative contracts to a central repository

OTC risk mitigation

Central clearing obligations



Security and Futures Act (Singapore)

Regulating OTC derivatives

Promoting more effective disclosure requirements

Reporting OTC derivatives

Central clearing

Enhancing and refining enforcement and market conduct provisions



Security and Futures Act (Hong Kong)

Regulating OTC derivatives

Reporting of derivative contracts

Clearing obligations

Record keeping obligations

Minimize crime and misconduct



Senior Manager & Certification Regime (UK SMCR)

New code of conduct rules

Individual accountability regime

Introduces new Senior Management Functions > Statement of Responsibilities and Mgt Responsibilities Map

Annual certification for fitness and propriety

Phase I applies to banks only



Market Abuse Regulation (EU MAR)

Financial derivative markets

Improves market integrity and efficiency

Prohibits market abuse on regulated markets including improper disclosure of inside information and the manipulation of market prices through improper practices

Prohibits benchmark manipulation

Investor protection

Applies to any transaction, order or behaviour concerning MiFID financial instruments

Surveillance systems and monitoring requirements

Suspicious Transactions and Order Reporting obligations



Markets in Financial Derivative Directive (EU MiFID)

Effective, efficient and safe operation of financial markets

Allowance for a stronger supervision of commodity derivative markets

Investor and client asset protection

New definitions of trading venues including MTF and OTF

Trade reporting obligations

Algorithmic and high frequency trading rules

Pre and post trade transparency

Best execution

Commodity position limits

Record keeping requirements



Benchmark Regulation (EU)

Regulating benchmark providers



Senior Manager & Certification Regime (UK SMCR)

New code of conduct rules

Phase II implementation extends to all investment firms (non banks - from asset managers to commodities trading houses)



Wholesale Market Integrity and Transparency (EU REMIT)

Wholesale energy markets

Prohibits market manipulation and misuse of insider Information

Obligation to publish inside information

Suspicious transaction reporting



European Markets Infrastructure Regulation (EU EMIR)

Financial derivatives market

Increased transparency and liquidity

Reporting of derivative contracts to a central trade repository

OTC risk mitigation and clearing

Protect against market abuse



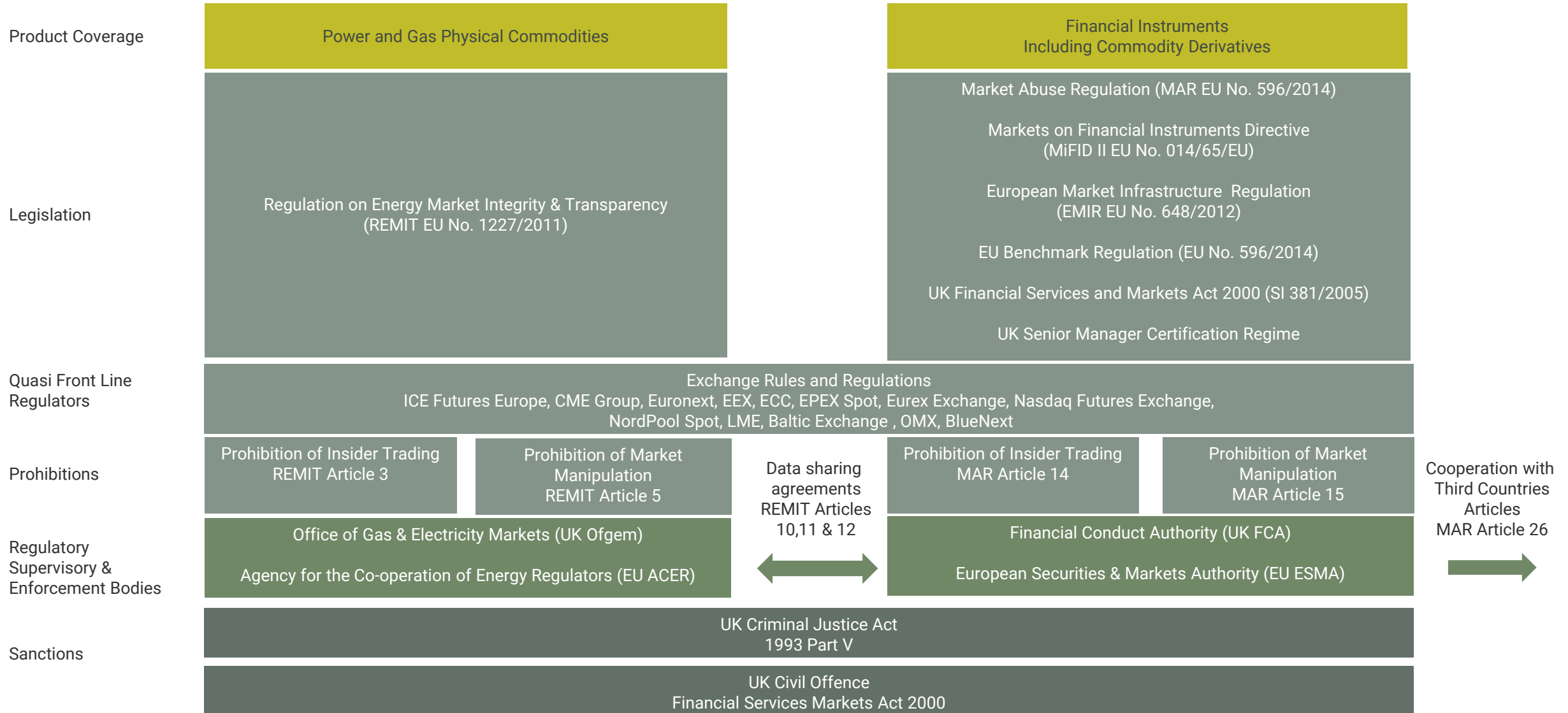
Wholesale Market Integrity and Transparency (EU REMIT)

Reporting of energy commodities trades and orders to ACER (European Wholesale Regulator)

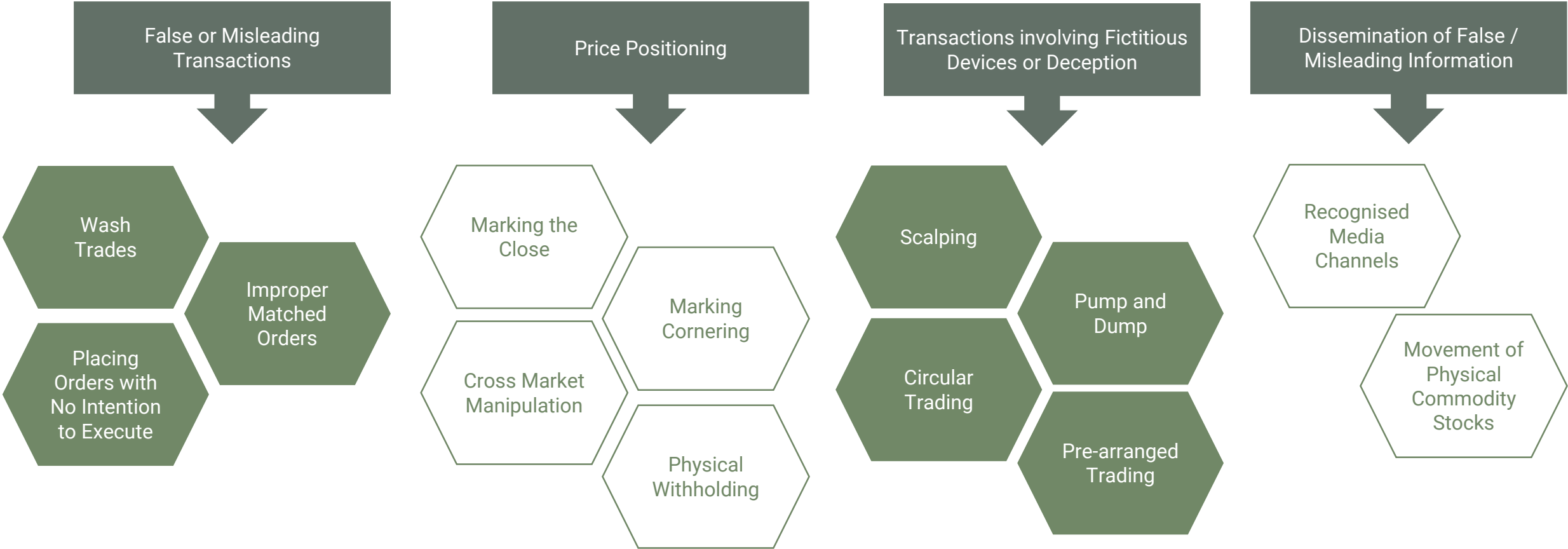
ACER surveillance and monitoring of market manipulation

UK & EUROPEAN REGULATORY ENFORCEMENT REGIMES FOR MARKET ABUSE

Energy Commodities Proprietary Trading Firms



REMIT MANIPULATIVE BEHAVIOUR INDICATORS



Source
ACER REMIT Guidance

UK COMMODITIES THEMATIC REVIEW

FCA Thematic Review Commodities Trading and Conduct Risk (Source: FCA Thematic Review Sep 2015)

“Many firms had **not embedded the lessons learned from recent market abuse cases** (such as LIBOR, FX and Gold). On this point, our benchmark thematic work also urges firms to take note of the outcome of recent enforcement cases. In some firms we found complacency towards the risk of market abuse. Many firms believed that commodity markets were ‘too deep, too liquid, and there are too many participants’ to be manipulated.

Most firms had not carried out a Code of Market Conduct (MAR1) risk assessment and therefore **could not demonstrate they had adequate monitoring and surveillance across the full range of market abuse risks** to which they were exposed. In addition, many **firms could not demonstrate effective procedures to identify suspicious transactions and escalate them to the FCA in the form of Suspicious Transaction Reports (STRs)**. Only a small number of firms in the sample had submitted STRs relating to commodities trading, although many characterised events and market behaviour that may have required submissions.

Although some firms had embedded risk, such as risk analysts and risk systems on the trading desk, **few firms demonstrated intraday management information (MI) or risk monitoring**. We also observed lower levels of monitoring and management of prudential risks such as credit, liquidity and market risk at commodity trading firms than at some firms outside of this sector”.

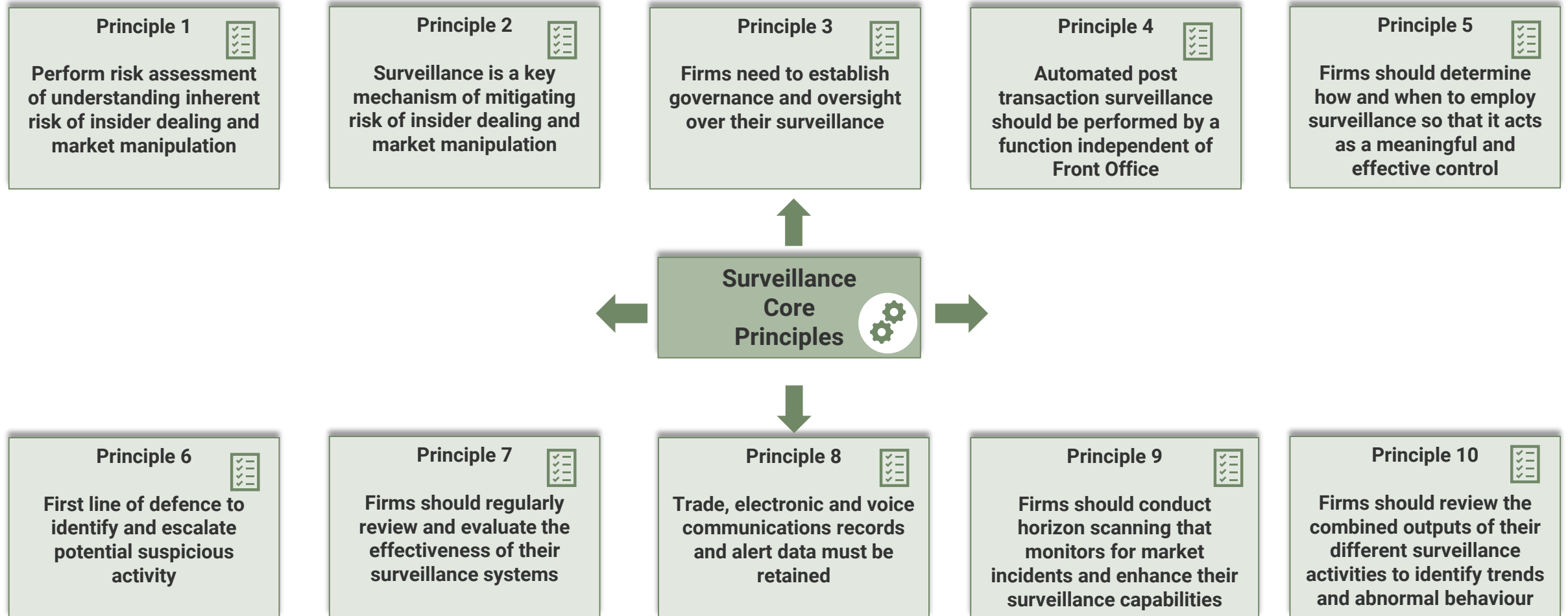
ESMA TRADE SURVEILLANCE REQUIREMENTS

The European Financial Regulator, ESMA, which provides regulatory oversight of the Market Abuse Regulation requires that effective arrangements, systems and procedures are established to detect and report suspicious orders and transactions (Source: ESMA RTS – Sept 2015).

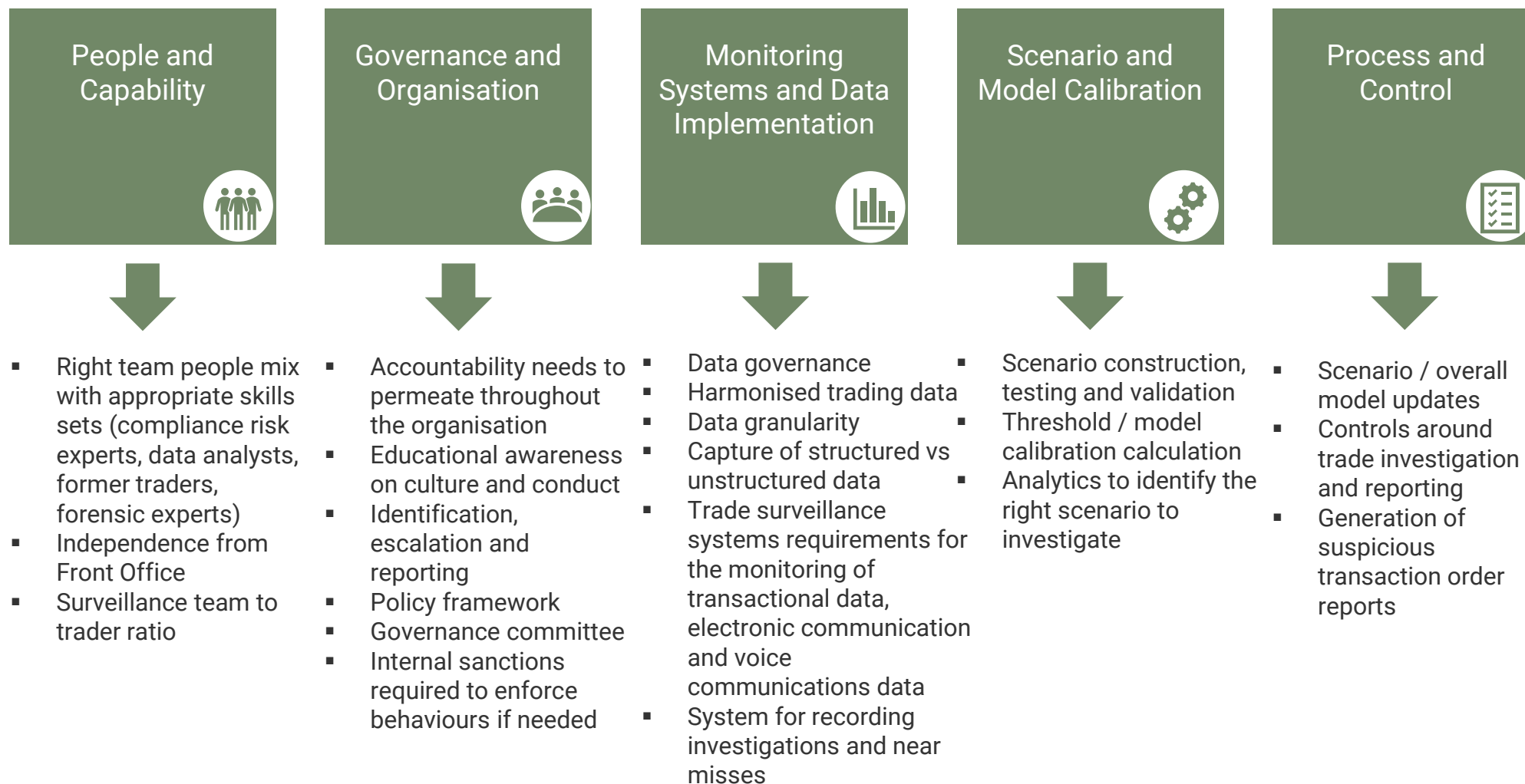
- “In order to detect market abuse entities will need to have in place a surveillance system. **The surveillance system must cover the full range of trading activities** undertaken by the entity including analysing every transaction and order, individually and comparatively, and which produces alerts for further analysis”
- “whether an automated system is necessary and if so its level of automation, entities should take into **account the number of transactions and orders that need to be monitored; the type of financial instruments traded; the frequency and volume of orders and transactions; and the size, complexity and/or nature of their business**”
- “an entity with little or no contact with the front office it will be difficult to detect suspicious orders and transactions without an automated system”
- “for a business with a limited dimension, it could be appropriate to establish an automated system relatively simple, whereas, for **more complex and sophisticated entities, a more elaborate and bespoke system** would be necessary to monitor effectively”
- “the entity must be able to explain to their competent authority upon request how they manage the alerts generated by the adopted system and **why such a level of automation is appropriate for their business**”
- “trading venues should include **software capable of deferred automated reading, replaying and analysis of order book data on an ex post basis**. This would be of particular relevance in an automated trading environment to analyse the activity and dynamics of a trading session, for instance by using a slow motion replaying tool”
- “entities **should adopt systems and procedures to document, recall and review the analysis performed on STORs** which have been submitted, as well as those suspicious orders and transactions which were analysed”

BEST PRACTISE GUIDE FOR TRADE SURVEILLANCE

The FICC Market Standards Board was established in 2015 in response to the Fair and Effective Markets Review in the UK with a mandate to improve conduct and raise standards in the FICC markets.



TRADE SURVEILLANCE PROGRAMME



EDF TRADING EXPERIENCE

Compliance & Trade Surveillance Evolution

- REMIT (EU No. 1227/2011) facilitated creation of a dedicated Compliance Function including a Market Surveillance Team
- Specialist resources hired including compliance advisory specialists, technologists and risks experts
- Global Compliance function created to ensure compliance to European, US and Asian market conduct rules
- Trade monitoring systems historically based on Energy Trade Risk Management systems and other Internal Control systems
- Requirement for transactional surveillance including monitoring of orders with automated alerts detecting market manipulative and insider trading behaviours
- Established a market surveillance team including monitoring of electronic and voice communications
- In 2013 undertook an evaluation of Trade Surveillance systems evaluating “Build vs Buy” solutions. 10 vendors evaluated against an internal development “Proof of Concept”
- Significant gaps in vendor surveillance systems on REMIT insider trading capabilities identified. Vendor systems had typically evolved from financial derivatives markets and lacked automated alerts for detection of REMIT insider trading breaches behaviour
- Internally developed a solution and went live in February 2014 with a phased implementation approach
- Embraced new technologies include cloud storage and business intelligence

EDF TRADING EXPERIENCE

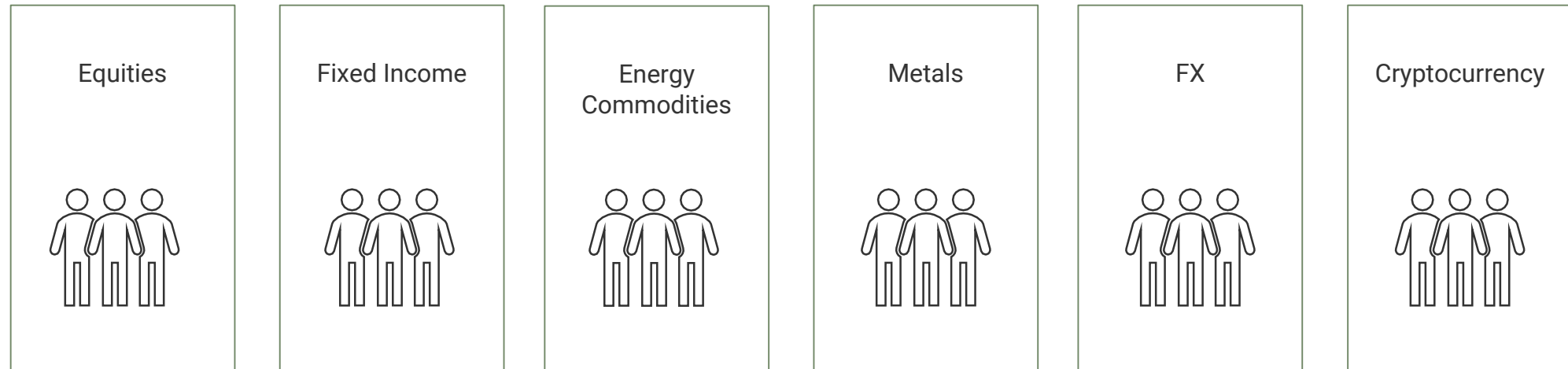
Compliance & Trade Surveillance Evolution

- Encountered many challenges in building a trade surveillance solution internally
 - internal expertise, “know how” and staff retention
 - transactional data quality and accuracy
 - market data availability
 - building custom data feeds
 - interpreting market manipulation indicators and insider trading behaviour to design custom built alerts
 - to build complete suite of market abuse indicators adhering to all markets such as cross market and cross asset alerts
 - recalibration of alerts based on internal risk assessment, lack of knowledge sharing from peers
 - sandbox availability
 - increased cost of ownership with ongoing development, maintenance and support

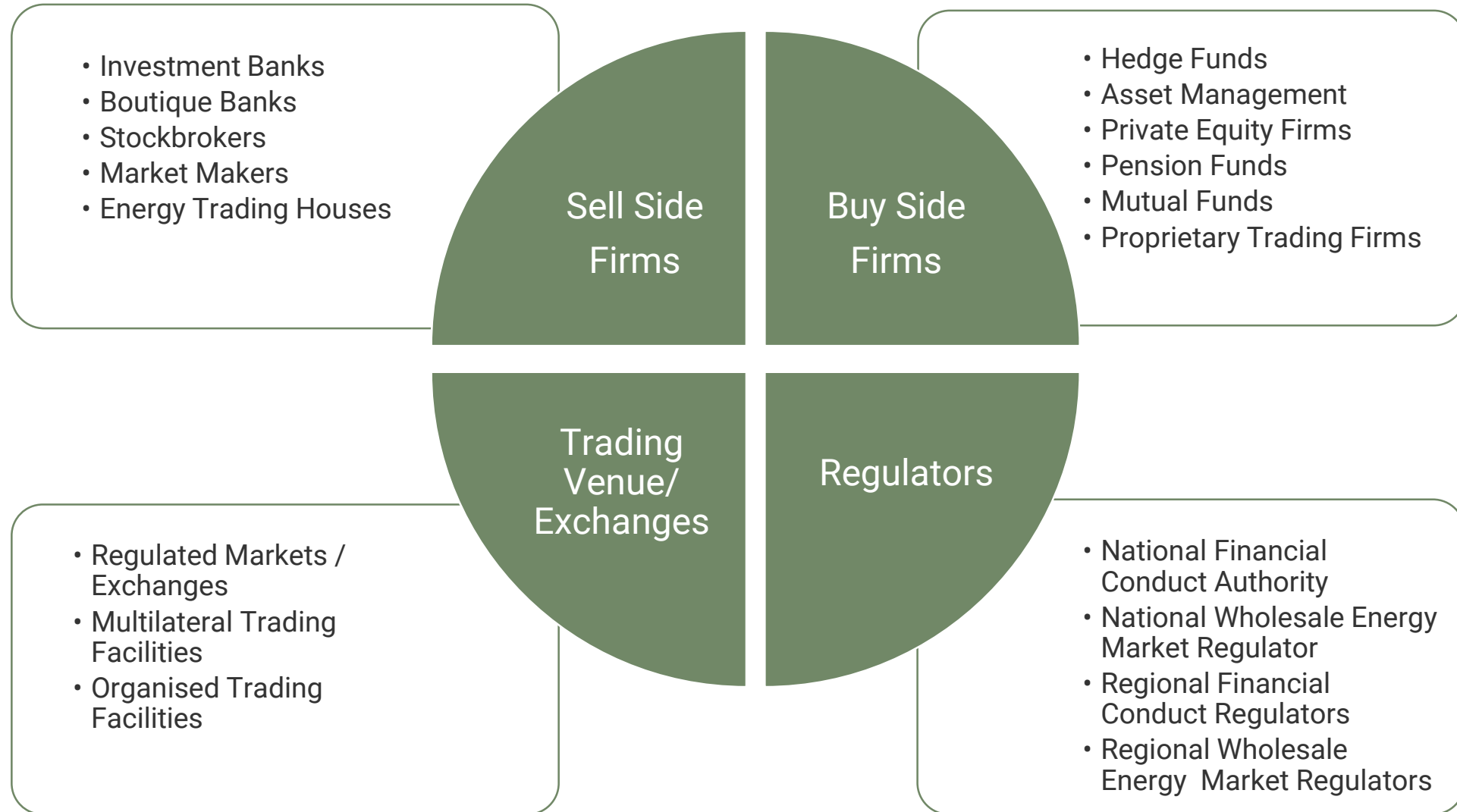
HOW CAN IRISIUM HELP YOUR BUSINESS

Regulatory Subject Matter Expertise

- Irisium has in place a team of subject matter experts with extensive industry experience gained at buy & sell side firms in market abuse regulation covering all key asset classes
 - Experience in understanding and interpreting the complexities of the regulations / rule book and translating these into compliance programmes including providing comprehensive trade surveillance solution offering to capital markets
 - Experience in managing surveillance monitoring teams covering transactional data and electronic, voice communications data
 - Experience in dealing with Regulators on investigations, suspicious transaction order reports and subject data access requests
 - Experience dealing with Trading Venues on investigations and new exchange rules
 - Experience working with industry associations including the FIA and EFET
 - Experience running compliance training programmes for 1st and 2nd lines of defence



IRISIUM TRADE SURVEILLANCE MARKET COVERAGE



IRISIUM INSIGHTFUL ANALYTICS & CONTEXTUAL SURVEILLANCE

Business Intelligence

Going beyond risk management and regulatory mandates, Irisium provides business analytics supporting better informed commercial decisions:

- Best execution
- Trading cost and quality
- Financial what ifs
- Trading cost analytics
- Trader / portfolio performance assessment
- Cross selling opportunity identification

Regulatory Surveillance

If you are a financial institution it is very likely you have a market surveillance obligation under one of the many regulations such as MAR, MiFID II, REMIT, Dodd Frank Act, MAS etc.

At Irisium we have experience of the global regulations and we work in partnership with our clients to configure our market abuse alerts and analytics to uniquely meet each individual client needs.

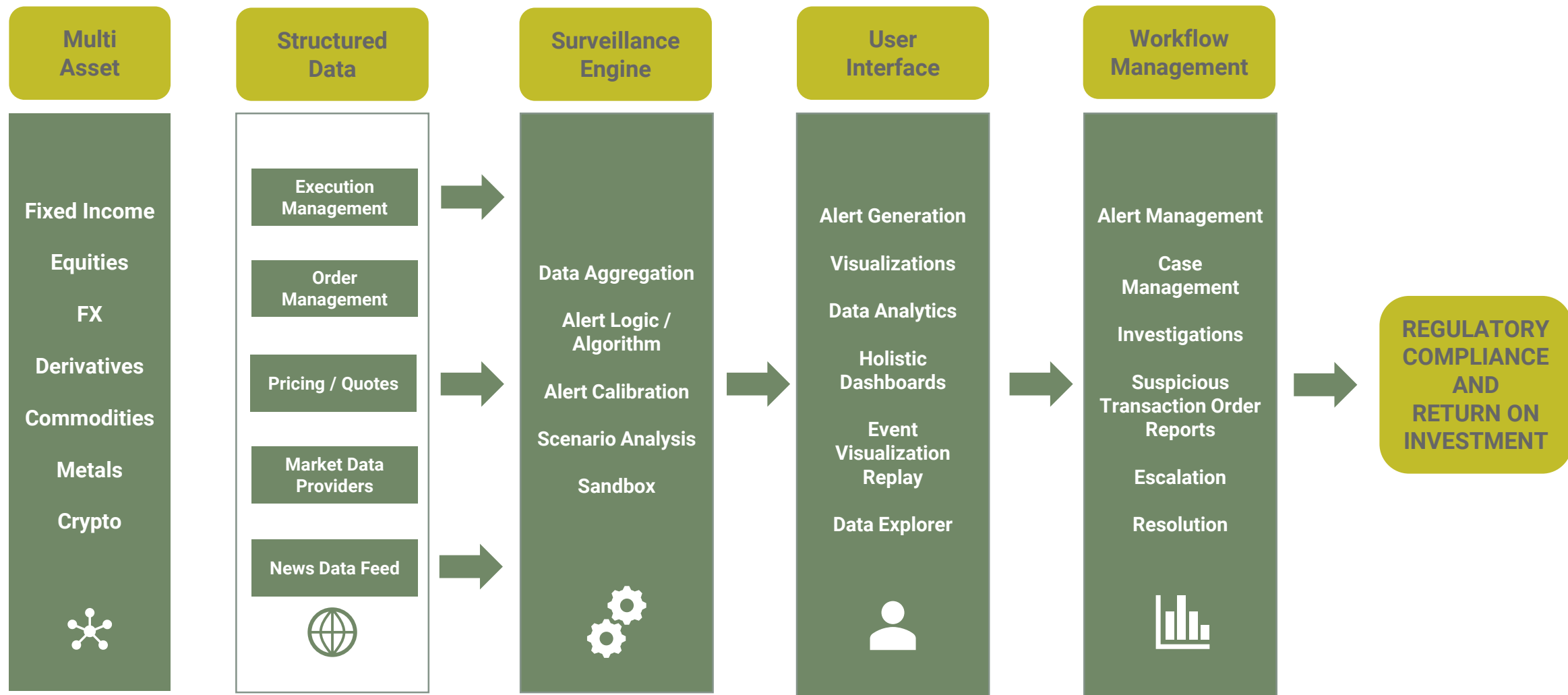
Operational Risk Management

Analytics designed to help manage and reduce risk, such as:

- Abnormal order volume / frequency
- Unusual execution behaviour
- Order to trade ratios
- Market maker
- MiFID II flag thresholds
- Trade error statistics
- Trade reconstruction

IRISIUM TRADE SURVEILLANCE

Conceptual Architecture



IRISIUM TRADE SURVEILLANCE

Spend more time managing risk and less time managing the service
Irisium surveillance system is easy to configure, fast to respond and built to meet current and future needs

Un-Paralleled User Experience



High performance web interface based on HTML5 application delivered using OpenFin technology allowing high volume updates and low latency.

Provides multi-window workspace, widgets and tag features including a powerful search engine.

Intuitive dashboards and visualisations including charts provides a powerful user interface.

Enhanced Alert Suite



An enhanced suite of alerts covering regulation and operational indicators.

Operational alerts include RFQ to Trade ratio, Abnormal Trade and Abnormal Order indicators.

Dynamic Alert Scenario Analysis



Powerful alert configuration and calibration capabilities for performing scenario analysis / back testing executed on a segregated "sandbox". This provides flexibility for fine tuning of live alerts in order to reduce false positives.

Configuration changes are fully audited and are promoted to production by end users.

Integrated Case Management



A user friendly case management system with workflow provides a central data repository for all compliance related investigations with the ability to upload and file external reports.

New product features include linking multiple cases together.

The case management system provides tamper proof auditing of records.

IRISIUM TRADE SURVEILLANCE

Technology Stack



Modern technology stack based on state of the art proven technologies delivering an architecture fit for today and for the foreseeable future.

Based on technologies that provide a distributed streaming platform supporting real-time streaming data pipelines that reliably transport data between systems.

High Message Throughput



A distributed architecture allows true horizontal scaling with the capability to process in excess of 100,000 messages per second equating to 6 Million messages per minute.

Real Time Transaction Processing



Delivering real-time data processing and analytics using best in breed data streaming technology.

Message feeds for transactional data are high throughput, low latency for handling real-time data feeds.

Alert logic and analytics is based on real-time processing with the option for batch processing.

New Standard Data Gateway



Standard data gateway using FIX message protocol and API allows ease of integration with client data. FIX is a global standard used in capital markets for the transmission of financial data, such as, orders and trade

Market data feeds is in place with Reuters for prices, indices and news.

New Deployment Process & Data Storage



Fast and cost effective deployments in aggressive timescales whether a hosted cloud based solution or on on-premise client installation.

The datastore for "current" transactional data and calculated time series is optimised for high write rates and high availability. The file management system provides archive data storage with high scalability and proven fault tolerance.

New Flexible Data Model



New data model supports multi asset model including FX, Commodities, Fixed Income, Equities, Metals and Crypto.

New data model allows ease of capture of structured (transaction) and unstructured data (IM, E Mail, Voice).

IRISIUM TRADE SURVEILLANCE - KEY GUI FUNCTIONALITY

Alert Inbox & Management



The “alert inbox” shows users the generated alerts, updating in real time. The inbox is the entry point for day to day operations and allows users to associate alerts with a new or existing case or close with commentary.

Alert Configuration & Scenario Analysis



Allows authorised users to configure or to re-configure alert instances, back test against historic data and view the audit trail of activity.

Alert Details



Provides context on market / participant behaviour appropriate to the type of alert allowing the user to understand why the alert fired and aid them in identifying the appropriate next steps. The Alert Detail provides a chart visualisation of the transactional data providing valuable market insights.

Case Management Workflow



Case Management allows the user to develop a comprehensive case file management system with one centralised repository to upload and store all supporting information. Every case has a status with new, investigation, escalation, parked and closed. Users have the ability to manage case workflow.

Business Intelligence Dashboard



Provides summary information on the ‘health’ of the system such as alert counts, ages, data flow rates as well as ‘top 10’ pivots of alerts by client / product.

Data Explorer



Provides the user with grid and graphical access to the transactional data as well as the ‘summarised’ time series data used by the alert calculations.

IRISIUM REGULATORY ALERTS

- Irisium has a comprehensive suite of automated alerts based on market abuse regulatory requirements
- These are generated in real-time, 15 minute delayed and T+1 batch mode



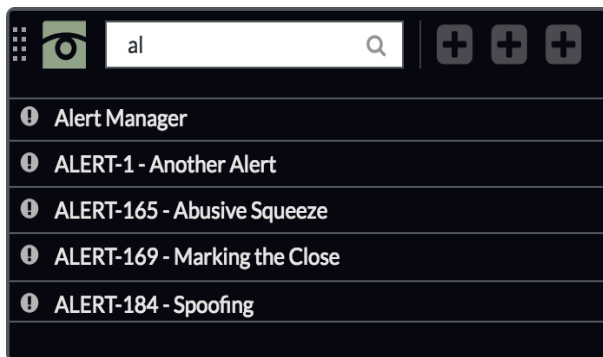
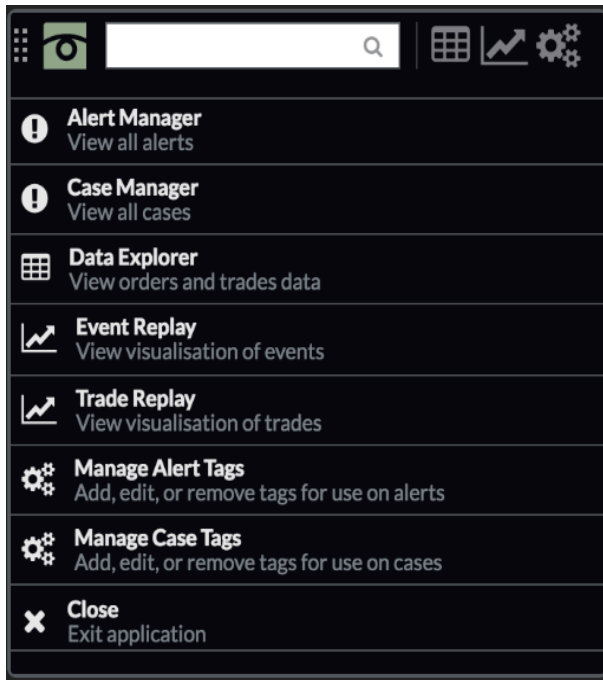
IRISIUM OPERATIONAL ALERTS

- Irisium has a comprehensive suite of operational alerts. These have been carefully designed taking input from exchanges, trading venues and buy & sell side firms

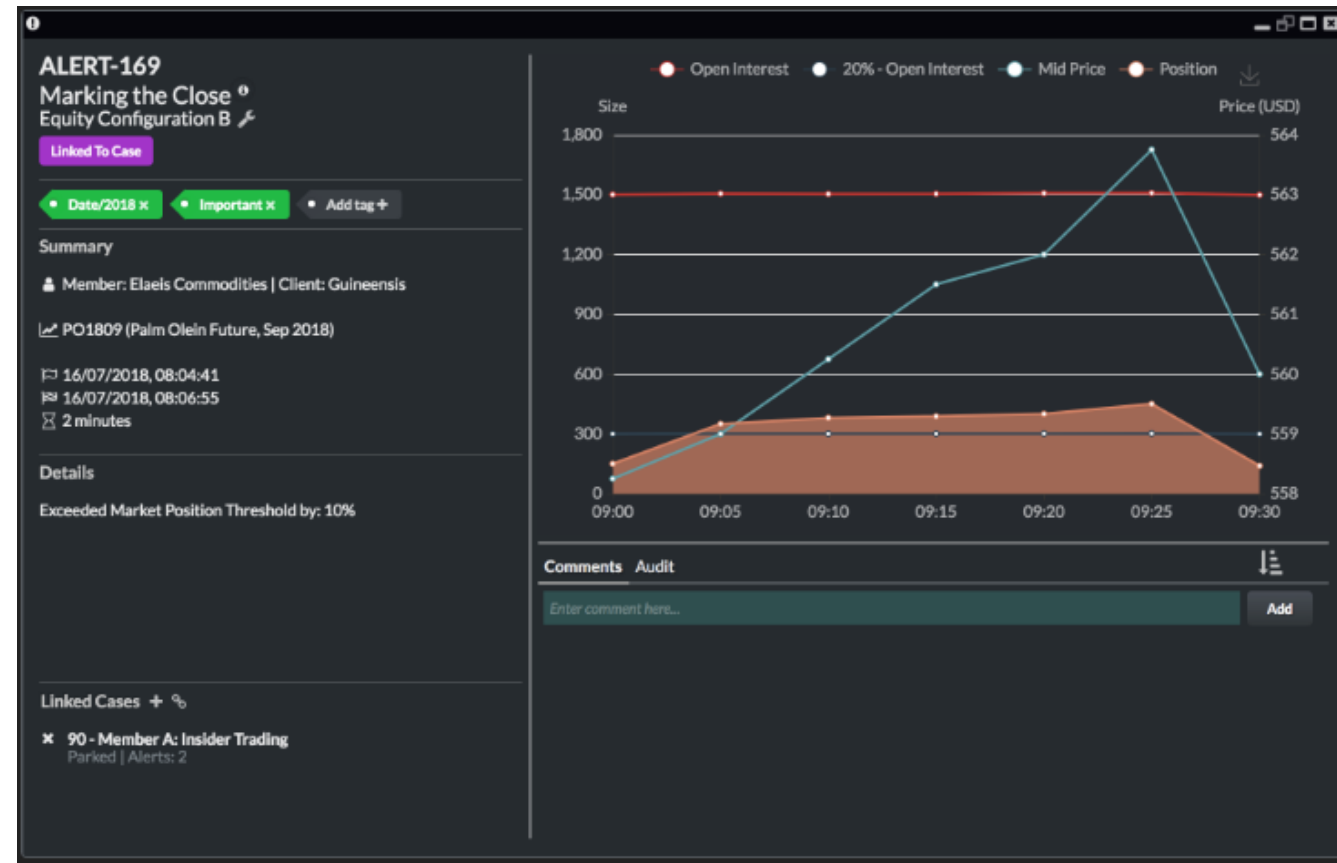
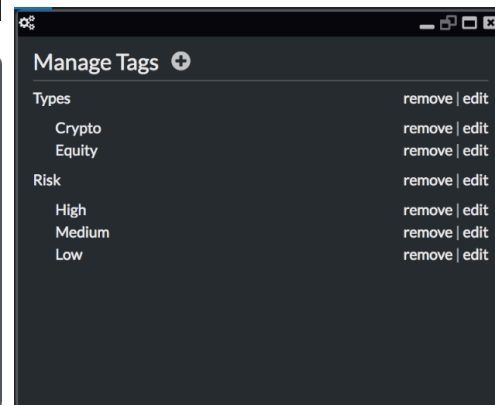
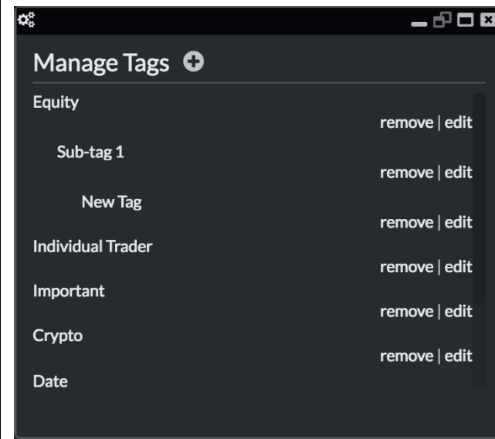


IRISIUM SURVEILLANCE – LAUNCHER & ALERT MANAGER

Demonstration Version with Test Data



Alert Manager								
			Open selected	Link selected to case	Assign selected alerts	Add tag to selected	Close selected	
Alert ID	Alert	Status	Tags		Instance	Instrument	P	Columns
169	Marking the Close	Linked To Case	Date/2018	Important	Equity Configuration B	PO1809 (Palm Olein Future...	M	
184	Spoofing	Linked To Case	Equity	Date/2018	Equity Configuration A	PO1910 (Palm Olein Future...	M	
1	Another Alert	Linked To Case			Equity Configuration A	PO1809 (Palm Olein Future...	M	
165	Abusive Squeeze	Linked To Case	Important	Individual Trade...	Equity Configuration A	PO1809 (Palm Olein Future...	M	



IRISIUM SURVEILLANCE – CASE MANAGER & TRADE REPLAY

Demonstration Version with Test Data

Case Manager							
Create Case							
Open selected Assign selected cases Update status on selected Add tag to selected Relate selected to case							
Case ID	Case	Linked AL...	Status	Assignee	Tags	Prio...	Last Modified
90	Member A: Insider Trading	2	Parked	Jane Smith	Risk/High	Low	Thu Jul 19 2018 10:24
91	Member B: Abusive Squeeze	1	Escalated		Risk/Low Types/Equity	Low	Tue Jul 17 2018 15:56

CASE-91

Member B: Abusive Squeeze

Last modified: 17/07/2018, 15:56:29

Escalated Low

Assign case...

Risk/Low x Types/Equity x Add tag +

Description

We are looking into potential instances of Abusive Squeeze abuse ...

Attached Files

- evidence-2.png 1.10 KB | Wed, 21 Feb 2018 10:55:10 GMT
- Evidence-1.docx 11.43 KB | Mon, 16 Jul 2018 07:46:02 GMT

Related Cases

- 90 - Member A: Insider Trading Parked | Alerts: 2

Linked Alerts

Open selected

Alert ID	Alert	Status	Tags
165	Abusive Squeeze	Linked To Case	Important Individual Trade...

Comments Audit

Enter comment here...

Add



Data Explorer										
Showing data for orders										
Unique ID	Transaction Time	Transaction Type	Order Type	ISIN	Order Quantity	Limit Price	Side	Upstream Reference	On Behalf	Color
BE000214850...	2017-09-01 09:29:58	C	2	BE0002148501	122	115.86	B	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:29:55	C	2	BE0002148501	200	115.84	B	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:29:50	C	2	BE0002148501	99	115.82	B	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:29:40	E	2	BE0002148501	57	115.88	S	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:29:10	N	2	BE0002148501	122	115.86	B	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:27:10	R	2	BE0002148501	200	115.84	B	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:27:01	N	2	BE0002148501	88	115.83	B	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:25:21	N	2	BE0002148501	99	115.82	B	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:24:55	N	2	BE0002148501	57	115.88	S	BE0002148501-20170901...	4ed77d754	
BE000214850...	2017-09-01 09:24:25	C	2	BE0002148501	54	115.87	S	BE0002148501-20170901-5	4ed77d754	
BE000214850...	2017-09-01 09:24:20	C	2	BE0002148501	85	115.88	S	BE0002148501-20170901-4	4ed77d754	
BE000214850...	2017-09-01 09:24:15	C	2	BE0002148501	122	115.89	S	BE0002148501-20170901-3	4ed77d754	
BE000214850...	2017-09-01 09:24:00	E	2	BE0002148501	57	115.86	B	BE0002148501-20170901-6	4ed77d754	
BE000214850...	2017-09-01 09:23:55	E	2	BE0002148501	57	115.86	B	BE0002148501-20170901-2	4ed77d754	
BE000214850...	2017-09-01 09:23:50	N	2	BE0002148501	54	115.87	S	BE0002148501-20170901-5	4ed77d754	
BE000214850...	2017-09-01 09:22:00	N	2	BE0002148501	85	115.88	S	BE0002148501-20170901-4	4ed77d754	
BE000214850...	2017-09-01 09:20:20	N	2	BE0002148501	122	115.89	S	BE0002148501-20170901-3	4ed77d754	
BE000214850...	2017-09-01 09:20:00	N	2	BE0002148501	57	115.86	B	BE0002148501-20170901-2	4ed77d754	

THE FUTURE OF TRADE SURVEILLANCE

