Breaking the mould:
New approaches to capital markets compliance

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Landscape of Capital Markets Compliance

- Trade Surveillance
- Insider Compliance
- Market Abuse
- Conflicts of Interest
- Best Execution
- Market Crossing
- AML
- Risk Map
### Why Firms need Surveillance & Compliance

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Firm</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>Bobby Junger</td>
<td>Bond Trader</td>
<td>170,000,000 €</td>
</tr>
<tr>
<td>2008</td>
<td>Jerome Kerviel</td>
<td>Société Générale</td>
<td>4,900,000,000 €</td>
</tr>
<tr>
<td>2011</td>
<td>Kweku Adoboli</td>
<td>UBS London</td>
<td>2,300,000,000 $</td>
</tr>
<tr>
<td>1994</td>
<td>Nick Leasson</td>
<td>Bearing Bank</td>
<td>1,400,000,000 $</td>
</tr>
<tr>
<td>2009</td>
<td>Raj Rajaratnam</td>
<td>Galleon</td>
<td>49,000,000 $</td>
</tr>
</tbody>
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Challenges in Capital Markets Compliance

- Speed
- Data volume
- Data structure
Speed
Moore's Law

**Intel 4004**
- Year: 1971
- Transistors: 2,300
- Nanometers: 10,000

**Intel 286**
- Year: 1982
- Transistors: 100,000
- Nanometers: 1,500

**Intel Pentium**
- Year: 1991
- Transistors: 3 million
- Nanometers: 800

**Intel Pentium 4**
- Year: 2000
- Transistors: 42 million
- Nanometers: 180

**Intel Xeon E7**
- Year: 2011
- Transistors: 2,6 billion
- Nanometers: 23

**2022**
- Transistors: 200 billion
- Nanometers: 1
The blink of an eye takes about 100 ms

Algomachines

- 10 µs for 1 transaction
- 10,000 transactions in the blink of an eye
- Approx. 2,000 algomachines are in use all over the world

Theoretical number of transactions contemplated by algomachines during this presentation:

300,000,000,000
Data volume

- Rapid growth of the data volume available in the financial markets
- Linking data to identify patterns and distinguish marks
- New approaches such as Sentiment Analysis, Principal Component Analysis,…
Data structure

Structured Information
- Market data
- Instrument Reference data
- Ad-hoc news
- Transaction data
- Employee data
- Order data

Unstructured Information
- Blogs
- Discussion Forums
- „News“
- Social Networks

Benefits for the market
- Broadened approach of detecting suspicious trading behaviour
- Early recognition of trends and patterns
- Decision support in investigation and escalation

Sentiment Analysis
Scenario Analysis
Analytic Models
Visualisation
Market Abuse Analysis

Specific pieces of true or untrue information may be misused to illegally manipulate financial markets. Some examples of these are:

- False information
- Gross exaggeration
- Insider knowledge
- Rumours

The objectives and specific characteristics of these different forms of information-based abuse can be typified in various scenarios.

- Scenario 1: Market sounding
- Scenario 2: Pump and dump
Market abuse scenario: Pump & Dump

**Goal:** Generating profit by selling a stock position of a certain company

**Typical behaviour:**

- Distribution of false positive information related to a company whose shares are tradable
- Information will encourage other market participants to buy stock of that company
- Increased demand will increase the market price to an artificial price level
- Selling a position in that shares
Market abuse scenario: Pump & Dump

Apple Stock is going to rocket up in the next few days no matter what. I have full confidence in it. I've been fully concentrated on this stock since last year and even though I bought it high, it never let me down. I know a few people that work in/with apple. And I know a lot about their software. Trust me when I say BUY BUY BUY!!! Get it quick before it goes up!

www.blogger.com/comment.g?blogID=3473820866113264295&postID=312131999368990951&isPopup=true
Visualisation of results

Sentiment documents
Outlook

• Requirements for effective capital market surveillance are growing at a rapid pace

• New directives such as ESMA, MADII, MiFID Review require significant investments in compliance systems

• Higher speeds are achieved in the field of market surveillance by using e.g. complex event processing

• Graphical visualisation as well as linking and cross-referencing of information will play a decisive role in identifying market manipulating trading patterns

• New methods of analysis such as principal component analysis

• Integration of unstructured data in the market surveillance analysis
Acknowledgement

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THANKS